LGB5124A
LGB5128A

SFP Gigabit Managed Switch Eco

Command-Line Interface (CLI) Management Guide

Customer Support Information

Order toll-free in the U.S.: Call 877-877-BBOX (outside U.S. call 724-746-5500)
FREE technical support 24 hours a day, 7 days a week: Call 724-746-5500 or fax 724-746-0746
Mailing address: Black Box Corporation, 1000 Park Drive, Lawrence, PA 15055-1018
Web site: www.blackbox.com • E-mail: info@blackbox.com

ABOUT THIS GUIDE

Disclaimer

Black Box Network Services shall not be liable for damages of any kind, including, but not limited to, punitive, consequential or cost of cover damages, resulting from any errors in the production information or specifications set forth in this document and Black Box Network Services may revise this document at any time without notice.

PURPOSE

This guide gives specific information on how to operate and use the management functions of the switch.

AUDIENCE

The guide is intended for use by network administrators who are responsible for operating and maintaining network equipment; consequently, it assumes a basic working knowledge of general switch functions, the Internet Protocol (IP), and Simple Network Management Protocol (SNMP).

CONVENTIONS

The following conventions are used throughout this guide to show information:

NOTE: Emphasizes important information or calls your attention to related features or instructions.

WARNING: Alerts you to a potential hazard that could cause personal injury.

CAUTION: Alerts you to a potential hazard that could cause loss of data, or damage the system or equipment.

RELATED PUBLICATIONS

The following publication details the hardware features of the switch, including the physical and performance-related characteristics, and how to install the switch:

The Installation Guide
Also, as part of the switch's software, there is an online web-based help that describes all management related features.

Release	Date	Revision
V1.28	04/02/2012	A1

Revision History

CONTENTS

ABOUT THIS GUIDE 2
Revision History 3
Chapter 1 Operation of CLI Management 6
Chapter 2 AAA Commands of CLI 11
Chapter 3 Access Commands of CLI 18
Chapter 4 Account Commands of CLI 21
Chapter 5 ACL Commands of CLI 23
Chapter 6 Aggregation Commands of CLI 28
Chapter 7 Arp-inspection Commands of CLI 31
Chapter 8 Auth Commands of CLI 34
Chapter 9 Config-file Commands of CLI 36
Chapter 10 DHCP Relay Commands of CLI 37
Chapter 11 DHCP Snooping Commands of CLI 40
Chapter 12 Diagnostic Commands of CLI 43
Chapter 13 Easyport Commands of CLI 45
Chapter 14 Event Commands of CLI 51
Chapter 15 Fdb Commands of CLI 53
Chapter 16 Firmware Commands of CLI 57
Chapter 17 GARP Commands of CLI 60
Chapter 18 GVRP Commands of CLI 63
Chapter 19 HTTPs Commands of CLI 66
Chapter 20 IGMP Commands of CLI 68
Chapter 21 IP Commands of CLI 73
Chapter 22 IP-Source-Guard Commands of CLI 77
Chapter 23 IPv6 Commands of CLI 83
Chapter 24 LACP Commands of CLI 85
Chapter 25 LLDP Commands of CLI 88
Chapter 26 LLDP Media Commands of CLI 94
Chapter 27 Loop protection Commands of CLI 102
Chapter 28 Port Mirroring Commands of CLI 106

Chapter 29 MLD Commands of CLI 108
Chapter 30 MVR Commands of CLI 118
Chapter 31 NAS Commands of CLI 121
Chapter 32 Port configuration Commands of CLI 131
Chapter 33 Port security Commands of CLI 139
Chapter 34 Privilege level Commands of CLI 144
Chapter 35 Private VLAN Commands of CLI 146
Chapter 36 QoS Commands of CLI 148
Chapter 37 Reboot Commands of CLI 168
Chapter 38 SFlow Commands of CLI 169
Chapter 39 Single IP Commands of CLI 172
Chapter 40 SMTP Commands of CLI 174
Chapter 41 SNMP Commands of CLI 179
Chapter 42 SSH Commands of CLI 187
Chapter 43 STP Commands of CLI 188
Chapter 44 Syslog Commands of CLI 203
Chapter 45 System Commands of CLI 207
Chapter 46 Thermal Protection Commands of CLI 211
Chapter 47 System time Commands of CLI 213
Chapter 48 UPnP Commands of CLI 217
Chapter 49 VCL Commands of CLI 219
Chapter 50 VLAN Commands of CLI 223
Chapter 51 Voice VLAN Commands of CLI 229
Chapter 52 EEE Commands of CLI 234
Chapter 53 Global Commands of CLI 236

Chapter 1 Operation of CLI Management

Initial Configuration

This chapter instructs you how to configure and manage the SFP Gigabit Managed Switch Eco through the CLI interface. With this facility, you can easily access and monitor, through the console port of the switch, all switch status, including MIBs status, each port activity, Spanning tree status, port aggregation status, multicast traffic, VLAN and priority status, even illegal access record and so on.

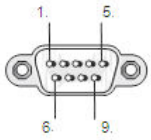
The serial port's configuration requirements are as follows:

- Default Baud rate—115,200 bps
- Character Size—8 Characters
- Parity—None
- Stop bit—One
- Data bits—8
- Flow control—none

The default username is **"admin"** and password is empty. For the first time to use, please enter the default username and password, and then click the **Enter** button. The login process now is completed.

About Null Console Cable identity:

Figure 1: Serial Port (DB9 DTE) Pin-Out



The DB9 cable is used for connecting a terminal or terminal emulator to the Managed Switch's RS-232 port to access the command-line interface.

The table below shows the pin assignments for the DB9 cable.

Function	Mnemonic	Pin
Carrier	CD	1
Receive Data	RXD	2
Transmit Data	TXD	3
Data Terminal Ready	DTR	4
Signal Ground	GND	5
Data Set Ready	DSR	6
Request To Send	RTS	7
Clear To Send	CTS	8

Publication date: Feb., 2012
Revision A1

CONNECTING TO THE CONSOLE PORT

The DB9 serial port on the switch's front panel is used to connect to the switch for out-of-band console configuration.

The command-line-driven configuration program can be accessed from a terminal or a PC running a terminal emulation program. The pin assignments used to connect to the serial port are provided in the following table.

Figure 2: Plug in the Console Port

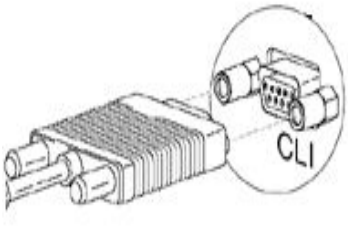
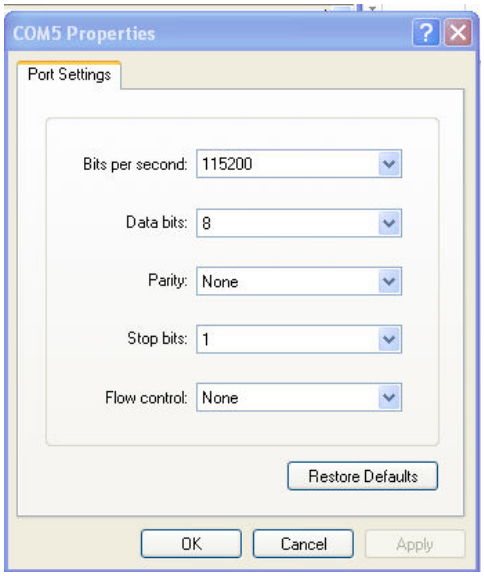


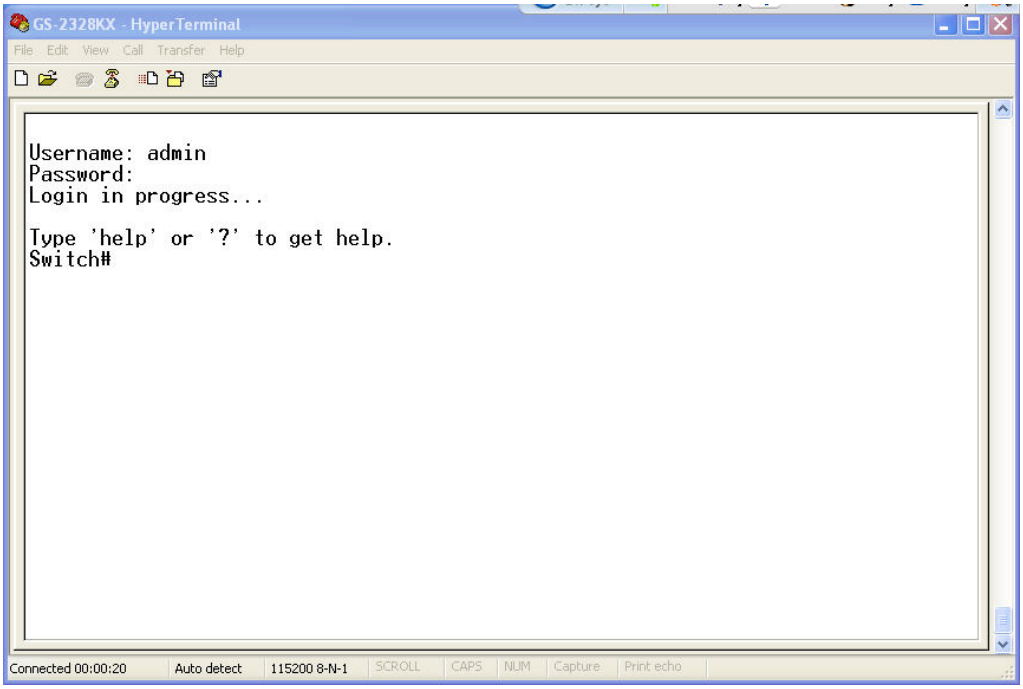
Figure 3: Console configure



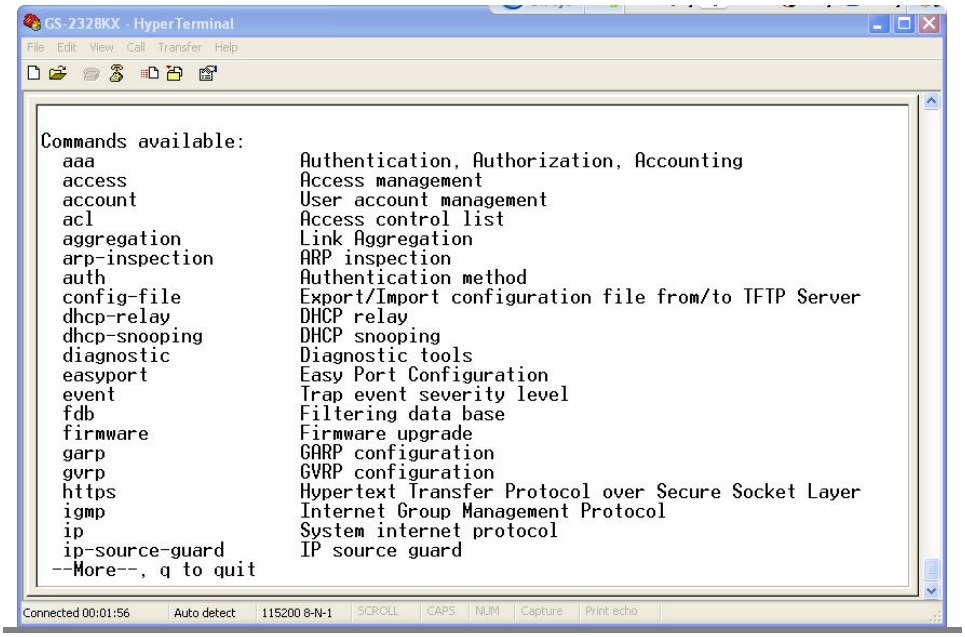
After the SFP Gigabit Managed Switch Eco finishes configuring configuration the it interface, you can access It via Console port. For instance, it will show the following screen and ask you to input your username and password to login and access authentication.

The default username is **"admin"** and password is empty. For first-time use, please enter the default username and password, and then click the **<Enter>** button. The login process now is completed. In this login menu, you have to input the complete username and password respectively; the switch will not give you a shortcut to username automatically. This looks inconvenient, but is safer.

Figure 4: Console CLI interface



NOTE: You can type "?" or "help" to get the switch help includes syntax or all function explaining. The screen shot as below figure displayed.



Chapter 2 AAA Commands of CLI

AAA

This section shows you to use an AAA (Authentication, Authorization, Accounting) server to provide access control to your network. The AAA server can be a TACACS+ or RADIUS server to create and manage objects that contain settings for using AAA servers.

Table1: AAA Commands in CLI

Command	Function
acc-radius	Configure RADIUS accounting Server
accounting	Configure Accounting mode
authorization	Configure Authorization mode
deadtime	Configure server dead time
fallback-author	Configure Authorization mode
radius	Configure RADIUS authentication server
show	Show AAA information
tacacs+	Configure TACACS+ authentication server
timeout	Configure server response timeout

acc-radius:

The command lets you configure the RADIUS accounting server parameter.

Syntax: **acc-radius** <index> <enable/disable> <ip-hostname> <0-65535> <Line>

Parameter :

<index> The RADIUS accounting Server index. The available value is from 1 to 5

<disable/enable> To enable or disable the RADIUS accounting service.

<ip-hostname> The RADIUS accounting server IP address or hostname.

<0-65535> The RADIUS accounting server UDP port. If the port is set to 0 (zero), then the default port (1813) is used.

<LINE> Secret shared with external accounting server. The Available value is up to 29 characters long.

EXAMPLE:

```
Switch(aaa)# acc-radius 1 enable 192.168.2.22 65535 radius
Switch(aaa)# show config

Server Timeout   : 15 seconds
Server Dead Time : 300 seconds
TACACS+ Authorization and Accounting Configuration:
Authorization                : Disable
Fallback to Local Authorization: Disable
Accounting                   : Disable
```

```
RADIUS Authentication Server Configuration:
Server Mode     IP Address or Host Name     Port  Secret
------ -------- -------------------------- ----- ------------------------------
RADIUS Authentication Server Configuration:
Server Mode     IP Address or Host Name     Port  Secret
------ -------- -------------------------- ----- ------------------------------

1      Disabled                           1812
2      Disabled                           1812
3      Disabled                           1812
4      Disabled                           1812
5      Disabled                           1812

RADIUS Accounting Server Configuration:
Server Mode     IP Address or Host Name     Port  Secret
------ -------- -------------------------- ----- ------------------------------

1      Enabled  192.168.2.22               65535 radius
2      Disabled                           1813
3      Disabled                           1813
4      Disabled                           1813
5      Disabled                           1813

TACACS+ Authentication Server Configuration:
Server Mode     IP Address or Host Name     Port  Secret
------ -------- -------------------------- ----- ------------------------------

1      Disabled                        49
2      Disabled                        49
3      Disabled                        49
4      Disabled                        49
5      Disabled                        49
Switch(aaa)#
```

accounting :

The command lets you enable or disable the RADIUS accounting operation mode.

Syntax: **accounting** <enable/disable>

Parameter :

<disable> Globally disable Accounting operation mode.

<enable> Globally enable Accounting operation mode.

EXAMPLE:

```
Switch(aaa)# accounting enable
Server disconnect!
Switch(aaa)# accounting disable
Switch(aaa)#
```

NOTE: If you didn't connect the RADIUS Server already then the switch will show "Server disconnect".

authorization:

To configure (enable/disable) RADIUS Authorization mode.

Syntax: **authorization** <enable/disable>

Parameter : **<disable>** Globally disable Authorization operation mode.

<enable> Globally enable Authorization operation mode.

EXAMPLE:

```
Switch(aaa)# authorization enable
Switch(aaa)#
```

deadtime:

The command lets you configure the RADIUS server deadtime.

Syntax: **deadtime** <0-3600>

Parameter : **<0-3600>** Time that a server is considered dead if it doesn't answer a request. The available value is from 0 to 3600 second

Default Setting : **None**

EXAMPLE:

```
Switch(aaa)# deadtime 3600
Server disconnect!
Switch(aaa)#
```

NOTE: If you didn't connect the RADIUS Server already then the switch will show "Server disconnect".

fallback-author:

The command lets you configure the fallback function of RADIUS authorization with enable/disable if remote authorization fails.

Syntax: **fallback-author** <disable/ enable>.

Parameter : **<disable>** Disable fallback function.

<enable> Enable fallback function if remote authorization fails.

EXAMPLE:

```
Switch(aaa)# fallback-author enable
Server disconnect!
```

NOTE: If you didn't connect the RADIUS Server already then the switch will show "Server disconnect".

radius:

The command lets you configure the RADIUS Server detail parameter

Syntax: **radius** <index> <enable/disable> <ip-hostname> <0-65535> <Line> .

Parameter :

<index> The RADIUS accounting Server index. The available value is from 1 to 5

<disable/enable> To enable or disable the RADIUS accounting service.

<ip-hostname> The RADIUS accounting server IP address or hostname.

<0-65535> The RADIUS accounting server UDP port. If the port is set to 0 (zero), then the default port (1813) is used.

<LINE> Secret shared with external accounting server. The Available value is up to 29 characters long.

EXAMPLE:

```
Switch(aaa)# radius 1 enable 192.168.2.22 0 radius
Server disconnect!
```

NOTE: If you didn't connect the RADIUS Server already then the switch will show "Server disconnect".

Show:

The command lets you display the RADIUS AAA information.

Syntax: **Show** <config>

Show <statistics> <1-5>

Parameter :

<config> To show AAA configuration

<statistics> To show RADIUS statistics

<1-5> The RADIUS Server Index

EXAMPLE:

```
Switch(aaa)# show config

Server Timeout   : 15 seconds
Server Dead Time : 300 seconds

TACACS+ Authorization and Accounting Configuration:
Authorization                 : Disable
Fallback to Local Authorization: Disable
Accounting                    : Disable

RADIUS Authentication Server Configuration:
Server Mode     IP Address or Host Name     Port  Secret
------ -------- -------------------------- ----- ------------------------------

1      Disabled                           1812
2      Disabled                           1812
3      Disabled                           1812
4      Disabled                           1812
5      Disabled                           1812

RADIUS Accounting Server Configuration:
Server Mode     IP Address or Host Name     Port  Secret
------ -------- -------------------------- ----- ------------------------------

1      Disabled                           1813
2      Disabled                           1813
3      Disabled                           1813
4      Disabled                           1813
5      Disabled                           1813

TACACS+ Authentication Server Configuration:
Server Mode     IP Address or Host Name     Port  Secret
------ -------- -------------------------- ----- ------------------------------

1      Disabled                             49
2      Disabled                             49
3      Disabled                             49
4      Disabled                             49
5      Disabled                             49
Switch(aaa)#

Switch(aaa)#  show statistics 1

Server #1 (0.0.0.0:1812) RADIUS Authentication Statistics:
Rx Access Accepts                   0  Tx Access Requests                  0
Rx Access Rejects                   0  Tx Access Retransmissions           0
Rx Access Challenges                0  Tx Pending Requests                 0
Rx Malformed Acc. Responses         0  Tx Timeouts                         0
Rx Bad Authenticators               0
Rx Unknown Types                    0
Rx Packets Dropped                  0
State:                       Disabled
Round-Trip Time:                    0 ms

Server #1 (0.0.0.0:1813) RADIUS Accounting Statistics:
Rx Responses                        0  Tx Requests                        0
Rx Malformed Responses              0  Tx Retransmissions                 0
Rx Bad Authenticators               0  Tx Pending Requests                0
Rx Unknown Types                    0  Tx Timeouts                        0
Rx Packets Dropped                  0
State:                       Disabled
Round-Trip Time:                    0 ms
Switch(aaa)#
```

tacacs+ : The command lets you configure the TACACS+ authentication server detail parameter.

Syntax: **tacacs+** <index> <enable/disable> <ip-hostname> <0-65535> <Line>

Parameter : **<index>** The TACACS+ authentication Server index. The available value is from 1 to 5.

<disable/enable> To enable or disable the TACACS+ authentication service.

<ip-hostname> The TACACS+ authentication server IP address or hostname.

<0-65535> The TACACS+ authentication server UDP port. If the port is set to 0 (zero), then the default port (1813) is used.

<LINE> Secret shared with an external accounting server. The available value is up to 29 characters long.

EXAMPLE:

```
Switch(aaa)# tacas+ 1 enable 192.168.2.22 0 tacacs
Server disconnect!
```

NOTE: If you didn't connect the TACACS+ Server already then the switch will show "Server disconnect".

timeout :

The command lets you configure server response timeout

Syntax: **timeout** <3-3600>

Parameter : **<3-3600>** The Timeout, which can be set to a number between 3 and 3600 seconds, is the maximum time to wait for a reply from a server.

EXAMPLE:

```
Switch(aaa)# timeout 360
Switch(aaa)#
```

Chapter 3 Access Commands of CLI

Access

This section explains how to configure the switch's access management table, including HTTP/HTTPS, SNMP, and TELNET/SSH. You can manage the Switch over an Ethernet LAN, or over the Internet..

Table 2: Access Commands in CLI

Command	Function
add	Add or modify access management entry
clear	Clear access management statistics
delete	Delete access management entry
mode	Configure the access management mode
show	Show access management information

add:

The command lets you add or modify the access management entry

Syntax: **add** <1-16> <ipv4/ipv6> <ip-address> <ip-address> <all> <snmp> <telnet> <web>

Parameter :

<1-16> Set the entry index

<ipv4> IPv4 format address

<ipv6> IPv6 format address

<ip-address> Start IP address

<ip-address> End IP address

<all> All interfaces on the switch physical ports

<snmp> Set the SNMP interface

<telnet> Set up the TELNET/SSH interface

<web> Set the HTTP/HTTPS interface

EXAMPLE:

Publication date: Feb., 2012
Revision A1

```
Switch(access)# add 1 ipv4 192.168.1.1  192.168.1.241 all
Switch(access)# show config
Access Management Mode : Disabled

W: WEB/HTTPS
S: SNMP
T: TELNET/SSH
Index Start IP Address               End IP Address                W S T
----- ------------------------------ ------------------------------ - - -
1     192.168.1.1                    192.168.1.241                 Y Y Y
Switch(access)#
```

clear: The command lets you clear access management statistics

Syntax: **Clear** < statistics>

Parameter : **<None>** Clear access management statistics

EXAMPLE:

```
Switch(access)# clear statistics
Switch(access)#
```

delete: The command lets you delete access management entry.

Syntax: **Delete** <1-16>

Parameter : **<1-16>** Entry index

EXAMPLE:

```
Switch(access)# delete  1
Switch(access)# show config
Access Management Mode : Disabled
W: WEB/HTTPS
S: SNMP
T: TELNET/SSH
Index Start IP Address               End IP Address                W S T
----- ------------------------------ ------------------------------ - - -
Switch(access)#
```

mode: The command lets you configure the access management mode

Syntax: **mode** <disable> <enable>

Parameter : **<disable>** Disable access management mode operation

<enable> Enable access management mode operation

EXAMPLE:

```
Switch(access)# mode enable
Switch(access)#
Switch(access)# show config
Access Management Mode : Enabled
W: WEB/HTTPS
S: SNMP
T: TELNET/SSH
Index Start IP Address               End IP Address                W S T
----- ------------------------------ ------------------------------ - - -
1     192.168.2.22                   192.168.2.250                 Y Y Y
Switch(access)#
```

show: The command lets you display access setting information

Syntax: **show** < config> / < statistics>

Parameter : **<config>** Show access management configuration

<statistics> Show access management statistics

EXAMPLE:

```
Switch(access)# show config

Access Management Mode : Enabled

W: WEB/HTTPS
S: SNMP
T: TELNET/SSH
 Index Start IP Address              End IP Address                W S T
----- ------------------------------ ------------------------------


Switch(access)# show statistics
Client  Receive     Allow       Discard
------  ----------  ----------  ----------
HTTP    0           0           0
HTTPS   0           0           0
SNMP    0           0           0
TELNET  0           0           0
SSH     0           0           0
```

Chapter 4 Account Commands of CLI

Account

Only the administrator can create, modify, or delete the username and password. The administrator can modify other guest identities' password without confirming the password, but must modify the administrator-equivalent identity. A guest-equivalent identity can modify his password only. You must confirm the administrator/guest identity in the Authorization field before configuring the username and password. Only one administrator is allowed to exist and cannot be deleted. In addition, up to four guest accounts can be created.

Table 3: Account Commands

Command	Function
add	Add or modify user account
delete	Delete user account
show	Show user account information

add: This command lets you add or modify user account

Syntax: **add** <1-15> <word> <word>

Parameter : **<1-15>** User privilege level

<WORD> Up to 32 characters to identify the user name

<WORD>: The password for this user name

EXAMPLE:

```
Switch(account)# add 10 david david
Switch(account)# show
User Name                       Privilege Level
------------------------------- ----------------
admin                                       15
david                                       10
```

delete: This command lets you delete a new operator user or add one in the switch.

Syntax: **delete** <WORD>

Parameter : **<WORD>** Up to 32 characters to identify the user name

Publication date: Feb., 2012
Revision A1

EXAMPLE:

```
Switch(account)# delete 12
Switch(account)# show
User Name                       Privilege Level
------------------------------- ----------------
admin                                       15
Switch(account)#
```

show : The command lets you display user account information that you set in the switch.

Syntax: **Show** <name>

Parameter : **<name>** Up to 32 characters to identify the user name

EXAMPLE:

```
Switch(account)# show
User Name                       Privilege Level
------------------------------- ----------------
admin                                       15
Switch(account)#
```

Chapter 5 ACL Commands of CLI

ACL

The switch access control list (ACL) is probably the most commonly used object in the IOS. It is used for packet filtering, but also for selecting types of traffic to be analyzed, forwarded, or influenced in some way. The ACLs are divided into EtherTypes: IPv4, ARP protocol, MAC, and VLAN parameters etc. Here we will just go over the standard and extended access lists for TCP/IP. As you create ACEs for ingress classification, you can assign a policy for each port. The policy number is 1–8, however, each policy can be applied to any port. This makes it very easy to determine what type of ACL policy you will be working with.

Table 4: ACL Commands

Command	Function
ace	Add or modify access control entry
action	Configure ACL port default action
Clear	Clear all ACL counters
delete	To delete the ACE (Access Control Entry) configuration on the switch
logging	Configure ACL port default logging operation
move	Move ACE
policy	Configure ACL port policy
rate-limiter	To set ACL rate limit
show	Show ACL information
shutdown	Configure ACL port default shut down operation

ace :

The command lets you add or modify Access Control Entry.

Syntax: **ace** <index>

Parameter : **<1-256> :** If the ACE ID is specified and an entry with this ACE ID already exists, the ACE will be modified. Otherwise, a new ACE will be added.

<0-256>: If the next ACE ID is non-zero, the ACE will be placed before this ACE in the list. If the next ACE ID is zero, the ACE will be placed last in the list.

policy: Policy ACE keyword, the rule applies to all ports configured with the specified policy.

port: Port ACE keyword, the rule applies to the specified port only.

Publication date: Feb., 2012
Revision A1

switch: Switch ACE keyword, the rule applies to all ports

<port-list> : available value is from switch physic port density, format: 1,3-5

any: Any frame can match this ACE.

arp : Only ARP frames can match this ACE. Notice the ARP frames won't match the ACE with Ethernet type.

etype: Only Ethernet Type frames can match this ACE.

icmp : Only ICMP frames can match this ACE. Notice the ICM frames won't match the ACE with Ethernet type.

ipv4: Only IPv4 frames can match this ACE. Notice the IPv4 frames won't match the ACE with Ethernet type.

tcp : Only TCP frames can match this ACE. Notice the TCP frames won't match the ACE with Ethernet type.

udp: Only UDP frames can match this ACE. Notice the UDP frames won't match the ACE with Ethernet type.

EXAMPLE:

```
Switch(acl)# ace 1 0 port 1 ipv4
Switch(acl/ace-port(ipv4))#
Switch(acl/ace-port(ipv4))# show
ACE ID      : 1                    Rate Limiter: Disabled
Ingress Port: 1                    Port Copy   : Disabled
                                  Mirror      : Disabled
Type        : User                 Logging     : Disabled
Frame Type  : IPv4                 Shutdown    : Disabled
Action      : Permit               Counter     : 0

MAC Parameters                     VLAN Parameters
--------------                     ---------------
DMAC Type   : Any                  802.1Q Tagged: Any
                                  VLAN ID      : Any
                                  Tag Priority : Any
IP Parameters
-------------
Protocol    : Any
Source      : Any
Destination : Any
TTL         : Any
Fragment    : Any
Options     : Any

Switch(acl/ace-port(any))#
Switch(acl/ace-port(ipv4))# end
Success! ACE ID 1 added last
```

action:

The command lets you configure ACL port default action

Syntax: **action** <port-list> <deny> <permit>.

Parameter : **<port-list> :** available value is from switch physical port density, format: 1,3-5

deny : Deny forwarding

permit : Permit forwarding

EXAMPLE:

```
Switch(acl)# action  1  permit
Switch(acl)#
Switch(acl)# show port
                Rate
Port Policy Action Limiter  Port Copy    Mirror   Logging  Shutdown Counter
---- ------ ------ -------- ------------ -------- -------- -------- ----------
1    1      Deny   Disabled Disabled     Disabled Disabled Disabled 0
2    1      Permit Disabled Disabled     Disabled Disabled Disabled 0
3    1      Permit Disabled Disabled     Disabled Disabled Disabled 0
4    1      Permit Disabled Disabled     Disabled Disabled Disabled 0
5    1      Permit Disabled Disabled     Disabled Disabled Disabled 0
……..

Rate Limiter  Rate
------------  ------------
1             1 PPS
2             1 PPS
3             1 PPS
4             1 PPS
```

delete :

This command lets you delete the ACE (Access Control Entry) configuration on the switch.

Syntax: **delete** <1-256>.

Parameter : **<1-256>** ACE ID must be exist

EXAMPLE:

```
Switch(acl)# delete  1
Switch(acl)#
Switch(acl)# show acl-config
Number of ACEs: 0
```

logging :

This command lets you configure ACL port default logging operation.

Syntax: **logging** <port-list> enable/disable

Parameter : **<port-list> :** Port list, available value is from switch physic port density, format: 1,3-5

disable : Frames received on the port are not logged

enable : Frames received on the port are stored in the system log

EXAMPLE:

```
Switch(acl)# logging  1  disable
Switch(acl)#
```

move:

This command lets you move ACE configuration between two indexes.

Syntax: **Move** <1-256> <0-256>

Parameter : **<1-256>** ACE ID must exist

<0-256> If the next ACE ID is non-zero, the ACE will be placed before this ACE in the list. If the next ACE ID is zero, the ACE will be placed last in the list.

EXAMPLE:

```
Switch(acl)# move 1  0
Switch(acl)#
```

policy:

This command lets you set ACL port policy on switch.

Syntax: **policy** <port-list> <1-8>

Parameter : **<port-list>** Port list, available value is from switch physical port density, format: 1,3-5

<1-8> Policy number

EXAMPLE:

```
Switch(acl)# policy  1 1
Switch(acl)#
```

port-rate:

This command lets you set acl port-rate on switch.

Syntax: **port-rate** <port-list> <1-8>

Parameter : **<port-list>** Port list, available value is from switch physical port density, format: 1,3-5

disable Disable rate limit

<1-16> Rate limiter ID

EXAMPLE:

```
Switch(acl)#  port-rate 1 1
Switch(acl)#
```

rate-limiter: This command lets you set the access control rule with rate limiter on the switch.

Syntax: **rate-limiter** <1-16> <kbps> <0-10000>

Parameter :

<1-16> Rate limiter ID

kbps Kbits per second

pps Packets per second

<0-10000> Rate in 100Kbps

EXAMPLE:

```
Switch(acl)# rate-limiter 1 kbps 100
Switch(acl)#
```

show : This command lets you show all access control entry settings or information of the switch.

Syntax: **show** acl-config/acl-status/port/rate-limiter

Parameter :

acl-config Show ACL configuration

acl-status Show ACL status

port Show ACL port configuration

rate-limiter Show ACL rate limiter

EXAMPLE:

```
Switch(acl)# show acl-config
Number of ACEs: 0
```

```
Switch(acl)# show port
                  Rate
Port Policy Action Limiter  Port Copy    Mirror   Logging  Shutdown Counter
---- ------ ------ -------- ------------ -------- -------- -------- ----------
1    1      Permit 1        Disabled     Disabled Disabled Disabled 0
2    1      Permit Disabled Disabled     Disabled Disabled Disabled 0
3    1      Permit Disabled Disabled     Disabled Disabled Disabled 0
4    1      Permit Disabled Disabled     Disabled Disabled Disabled 0
5    1      Permit Disabled Disabled     Disabled Disabled Disabled 0
6    1      Permit Disabled Disabled     Disabled Disabled Disabled 0
7    1      Permit Disabled Disabled     Disabled Disabled Disabled 0
8    1      Permit Disabled Disabled     Disabled Disabled Disabled 0
9A   1      Permit Disabled Disabled     Disabled Disabled Disabled 0
10A  1      Permit Disabled Disabled     Disabled Disabled Disabled 0
9B   1      Permit Disabled Disabled     Disabled Disabled Disabled 0
10B  1      Permit Disabled Disabled     Disabled Disabled Disabled 0

Rate Limiter  Rate
------------  ------------
1             1 PPS
2             1 PPS
3             1 PPS
4             1 PPS
5             1 PPS
 --More--, q to quit
```

Chapter 6 Aggregation Commands of CLI

Aggregation

The Aggregation is used to configure the Link Aggregation settings. You can bundle more than one port with the same speed, full duplex, and the same MAC to be a single logical port; so, the logical port aggregates the bandwidth of these ports. This means you can apply your current Ethernet equipment's settings to build the bandwidth aggregation. For example, if there are three Fast Ethernet ports aggregated in a logical port, then this logical port has bandwidth that's three times as high as a single Fast Ethernet port's bandwidth.

Table 5: Aggregation Commands

Command	Function
delete	Delete command
group	Configure the link aggregation group
mode	Configure the link aggregation traffic distribution mode
Show	Show aggregation group information

delete:

This command lets you delete the link aggregation entry on switch.

Syntax: **delete** <group>

Parameter : **<group>** The link aggregation group that you want to delete.

EXAMPLE:

```
Switch(aggregation)# delete group 2
Switch(aggregation)# show
Aggregation Mode
----------------
Source MAC      : Disabled
Destination MAC : Disabled
IP Address      : Disabled
TCP/UDP Port    : Disabled
```

group: This command lets you configure the link aggregation group.

Syntax: **group** <1-14> <port-list>

Parameter : **<1-14>** The Aggregation group id.

<port-list> available value is from the switch physical port density, format: 1,3-5

EXAMPLE:

```
Switch(aggregation)# group 2 5-7
Switch(aggregation)#
```

mode: The command lets you configure the link aggregation traffic distribution mode.

Syntax: **mode** dmac/ ip/ port/ smac disable/enable

Parameter : **dmac** Destination MAC address.

ip Source and destination IP address.

port Source and destination UDP/TCP port

smac Source MAC address

disable Disable field in traffic distribution

enable Enable field in traffic distribution

EXAMPLE:

```
Switch(aggregation)# mode ip disable
Switch(aggregation)#
Switch(aggregation)# show
Aggregation Mode
----------------
Source MAC      : Disabled
```

show: This command lets you display all aggregation configurations on the switch.

Syntax: **show** <cr>

Parameter : **<cr>** means you just press the Enter key.

EXAMPLE:

```
Switch(aggregation)# show
Aggregation Mode
----------------
Source MAC      : Enabled
Destination MAC : Disabled
IP Address      : Disabled
TCP/UDP Port    : Enabled

Group ID  Name    Type    Configured Ports  Aggregated Ports
--------  ------  ------  ----------------  ----------------
2         LLAG2   Static  5-7               None
Switch(aggregation)#
```

Chapter 7 Arp-inspection Commands of CLI

Arp inspection

The section describes how to configure the switch's ARP Inspection parameters. You can configure ARP Inspection to manage the ARP table.

Table 6: Arp-inspection Commands

Command	Function
add	Add ARP inspection static entry
delete	Delete ARP inspection static entry
mode	Configure ARP inspection mode
port-mode	Configure ARP inspection port mode
show	Show ARP inspection information

add:

This command lets you add ARP inspection static entry.

Syntax: **add** <port-list> <1-4094> <ip-address> <mac-address>

Parameter : **<port-list>** Port list, available value is from switch physical port density, format: 1,3-5

<1-4094> VLAN ID, available value is from 1 to 4094

<ip-address> IP address allowed for doing ARP request

<mac-address> MAC address, format 0a-1b-2c-3d-4e-5f

EXAMPLE:

```
Switch(arp-inspection)# add 1  5 192.168.1.2 0a-1b-2c-3d-4e-5f
Switch(arp-inspection)#
```

delete:

This command lets you delete ARP inspection static entry.

Syntax: **delete** <port-list> <1-4094> <ip-address> <mac-address>

Parameter : **<port-list>** Port list, available value is from switch physical port density, format: 1,3-5

<1-4094> VLAN ID, available value is from 1 to 4094.

<ip-address> IP address allowed for ARP request.

<mac-address> MAC address, format 0a-1b-2c-3d-4e-5f

Publication date: Feb., 2012
Revision A1

EXAMPLE:

```
Switch(arp-inspection)# delet 1  5 192.168.1.2 0a-1b-2c-3d-4e-5f
Switch(arp-inspection)#
```

mode :

The command lets you configure ARP inspection mode

Syntax: **delete** <port-list> <1-4094> <ip-address> <mac-address>

Parameter :

<port-list> Port list, available value is from switch physical port density, format: 1,3-5

<1-4094> VLAN ID, available value is from 1 to 4094

<ip-address> IP address allowed for doing ARP request

<mac-address> MAC address, format 0a-1b-2c-3d-4e-5f

EXAMPLE:

```
Switch(arp-inspection)# mode disable
Switch(arp-inspection)#
```

port-mode:

The command lets you configure ARP inspection port mode.

Syntax: **Port-mode** <port-list> disable/ enable

Parameter :

<port-list> available value is from switch physical port density, format: 1,3-5

disable Disable ARP inspection port mode

enable Enable ARP inspection port mode

EXAMPLE:

```
Switch(arp-inspection)# port-mode 1 disable
Switch(arp-inspection)#
```

show:

The command lets you display the ARP inspection configuration information.

Syntax: **show** config/ status

Parameter :

config Show ARP inspection configuration

status Show ARP inspection static and dynamic entry

EXAMPLE:

```
Switch(arp-inspection)# show config

ARP Inspection Mode : Disabled

Port  Port Mode
----  ---------
1     Disabled
2     Disabled
3     Disabled
4     Disabled
5     Disabled
6     Disabled
7     Disabled
8     Disabled
9     Disabled
10    Disabled
11    Disabled
12    Disabled
13    Disabled
14    Disabled
15    Disabled
16    Disabled
17    Disabled
18    Disabled
19    Disabled
20    Disabled
21    Disabled
22    Disabled
23    Disabled
24    Disabled
25    Enabled
26    Disabled
27    Disabled
28    Disabled
Switch(arp-inspection)#
```

Chapter 8 Auth Commands of CLI

Auth method

This page shows how to configure a user with authentication when he logs into the switch via one of the management client interfaces.

Table 7: Auth Method Commands

Command	Function
fallback	Configure local authentication fallback
method	Configure authentication method
show	Show Authentication configuration

fallback:

The command lets you configure the local authentication fallback function.

Syntax: **fallback** < console>/< ssh >/ < telnet >/ < web >, disable/enable

Parameter :

<console> Sets the authenticate method fallback via console

<ssh> Sets the authenticate method fallback via ssh

<telnet> Sets the authenticate method fallback via telnet

<web> Sets the authenticate method fallback via web

disable Disable local authentication if remote authentication fails

enable Enable local authentication if remote authentication fails

EXAMPLE:

```
Switch(auth)# fallback ssh disable
Switch(auth)#
```

method :

The command lets you configure Authentication method function.

Syntax: **method** < console>/< ssh >/ < telnet >/ < web >, local / none / radius / tacats+

Parameter :

<console> Sets the authenticate method via console

<ssh> Sets the authenticate method via ssh

<telnet> Sets the authenticate method via telnet

<web> Sets the authenticate method via web

local Use local authentication

none Authentication disabled

telnet Use remote RADIUS authentication

tacacs+ Use remote TACACS+ authentication

EXAMPLE:

```
Switch(auth)# method ssh local
Switch(auth)#
```

show: The command lets you display the ARP inspection configuration information.

Syntax: **show** <cr>

Parameter : **<cr>** means you just press the Enter key.

EXAMPLE:

```
Switch(auth)# show
Client   Authentication Method  Local Authentication Fallback
-------  ---------------------  ------------------------------
console  local                  Disabled
telnet   local                  Disabled
ssh      local                  Disabled
web      local                  Disabled10B   Disabled
```

Chapter 9 Config-file Commands of CLI

Config-file

This section describes how to export and import the Switch configuration. Any current configuration files will be exported as XML format.

Table 8: Config-file Commands

Command	Function
export	Export configuration file to TFTP server
import	Import configuration file from TFTP server

export:

The command lets you run the export function to export the switch configuration to TFTP server.

Syntax: **export** < ip-address> <WORD>

Parameter : **<ip-address>** The TFTP server ip address

<WORD> Configuration file name

EXAMPLE:

```
Switch(config-file)# export 192.168.1.100  testfile
Switch(config-file)#
```

Import:

The command lets you run the import start function to import the switch configuration from TFTP server.

Syntax: **import** < ip-address> <WORD>

Parameter : **<ip-address>** The TFTP server ip address

<WORD> Configuration file name

EXAMPLE:

```
Switch(config-file)# import 192.168.1.100  testfile
Switch(config-file)#
```

Chapter 10 DHCP Relay Commands of CLI

DHCP Relay

The section describes how to forward DHCP requests to another specific DHCP server via DHCP relay. The DHCP servers may be on another network.

Table 9: DHCP Relay Commands

Command	Function
clear	Clear DHCP relay statistics
mode	Configure DHCP relay mode
relay-option	Configure DHCP relay agent information option
server	Configure DHCP relay server
show	Show DHCP relay information

clear:

The command lets you clear DHCP relay statistics that you set on the switch.

Syntax: **clear** < statistics >

Parameter : **statistics** The parameter lets you to clear DHCP relay statistics

EXAMPLE:

```
Switch(dhcp-relay)# clear statistics
Switch(dhcp-relay)#
```

mode:

The command lets you configure DHCP relay mode on the switch.

Syntax: **mode** disable/ enable

Parameter : **disable** The parameter disables DHCP relay mode.

Enable The parameter enables DHCP snooping mode.

NOTE: When DHCP relay mode operation is set to enable, the agent forwards and transfers DHCP messages between the clients and the server when they are not on the same subnet domain. The DHCP broadcast message won't flood for security considerations.

EXAMPLE:

```
Switch(dhcp-relay)# mode disable
Switch(dhcp-relay)#
```

relay-option: The command lets you configure DHCP relay agent information.

Syntax: **relay-option** disable/ enable

Parameter : **disable** The parameter means you to disable DHCP relay agent information option mode.

Enable The parameter means you to enable DHCP relay agent information option mode.

NOTE: The agent inserts specific information (option 82) into a DHCP message when forwarding to DHCP server and removes it from a DHCP message when transferring to DHCP client. If the agent receives a DHCP message that already contains relay agent information, it will enforce the policy.

EXAMPLE:

```
Switch(dhcp-relay)# relay-option disable
Switch(dhcp-relay)#
```

server: The command lets you configure DHCP relay server ip address on the switch.

Syntax: **server** <ip-address>

Parameter : **<ip-address>** Type in the DHCP server IP address.

EXAMPLE:

```
Switch(dhcp-relay)# server 192.168.1.100
Switch(dhcp-relay)# show config
DHCP Relay Mode              : Disabled
DHCP Relay Server            : 192.168.1.100
DHCP Relay Information Mode   : Disabled
DHCP Relay Information Policy : Replace
Switch(dhcp-relay)#
```

show: The command lets you display DHCP relay information

Syntax: **show** config/statistics

Parameter : **config** The parameter lets you set DHCP relay configuration.

statistics The parameter lets you set DHCP relay statistics.

EXAMPLE:

```
Switch(dhcp-relay)# show config
DHCP Relay Mode              : Disabled
DHCP Relay Server            : 192.168.1.100
DHCP Relay Information Mode   : Disabled
DHCP Relay Information Policy : Replace

Switch(dhcp-relay)# show statistics

Server Statistics:
------------------
Transmit to Server        :         0 Transmit Error              :         0
Receive from Server       :         0 Receive Missing Agent Option :         0
Receive Missing Circuit ID :         0 Receive Missing Remote ID    :         0
Receive Bad Circuit ID    :         0 Receive Bad Remote ID        :         0

Client Statistics:
--------------------
Transmit to Client   :         0   Transmit Error      :         0
Receive from Client  :         0   Receive Agent Option :         0
Replace Agent Option :         0   Keep Agent Option    :         0
Drop Agent Option    :         0
Switch(dhcp-relay)#
```

Chapter 11 DHCP Snooping Commands of CLI

DHCP snooping

The section describes how to configure the switch's DHCP Snooping parameters. DHCP Snooping can prevent attackers from adding their own DHCP servers to the network.

Table 10: DHCP Snooping Commands

Command	Function
clear	Clear DHCP snooping statistics
mode	Configure DHCP snooping mode
Port-mode	Configure DHCP snooping port mode
show	Show DHCP snooping information

clear:

The command lets you clear DHCP snooping statistics entry that you set on the switch.

Syntax: **clear** <statistics> <port-list>

Parameter : **statistics** Clear DHCP snooping statistics

<port-list> Port list, available value is from 1 to 10B format:1,3-5

EXAMPLE:

```
Switch(dhcp-snooping)# clear statistics 1
Switch(dhcp-snooping)#
```

mode:

The command lets you configure DHCP snooping mode

Syntax: **mode** disable /enable

Parameter : **disable** The parameter disables DHCP snooping mode

enable The parameter enables DHCP snooping mode.

NOTE: When enabling DHCP snooping mode operation, the request DHCP messages will be forwarded to trusted ports and only allowed to reply to packets from trusted ports.

EXAMPLE:

```
Switch(dhcp-snooping)# mode disable
Switch(dhcp-snooping)#
```

port-mode: The command lets you configure DHCP snooping port mode

Syntax: **Mode** <port-list> trusted/ untrusted

Parameter : **<port-list>** Port list, available value is from 1 to 10B format:1,3-5

trusted Configures the port as trusted sources of the DHCP message

untrusted Configures the port as untrusted sources of the DHCP message

EXAMPLE:

```
Switch(dhcp-snooping)# port-mode 1 trusted
Switch(dhcp-snooping)#
Switch(dhcp-snooping)# show config

DHCP Snooping Mode : Disabled
Port  Port Mode
----  ---------
1     trusted
2     untrusted
3     untrusted
4     untrusted
5     untrusted
6     untrusted
7     untrusted
8     untrusted
9     untrusted
10    untrusted
11    untrusted
12    untrusted
13    untrusted
14    untrusted
15    untrusted
16    untrusted
17    untrusted
18    untrusted
--More--, q to quit
Switch(dhcp-snooping)#
```

show: The command lets you show DHCP snooping information.

Syntax: **show** config/ statistics

Parameter : **config** Show DHCP snooping configuration

statistics Show DHCP snooping statistics

EXAMPLE:

```
Switch(dhcp-snooping)# port-mode 1 trusted
Switch(dhcp-snooping)#
Switch(dhcp-snooping)# show config

DHCP Snooping Mode : Disabled
Port  Port Mode
----  ---------
1     trusted
2     untrusted
3     untrusted
4     untrusted
5     untrusted
6     untrusted
7     untrusted
8     untrusted
9     untrusted
10    untrusted
11    untrusted
12    untrusted
13    untrusted
14    untrusted
15    untrusted
16    untrusted
17    untrusted
18    untrusted
--More--, q to quit
Switch(dhcp-snooping)#
```

```
Switch(dhcp-snooping)# show statistics 1
Port 1 Statistics:             Receive Packets                  Transmit
Packets
---------------------------------------
-------------------------------------
Rx Discover                          0  Tx Discover                       0
Rx Offer                             0  Tx Offer                          0
Rx Request                           0  Tx Request                        0
Rx Decline                           0  Tx Decline                        0
Rx ACK                               0  Tx ACK                            0
Rx NAK                               0  Tx NAK                            0
Rx Release                           0  Tx Release                        0
Rx Inform                            0  Tx Inform                         0
Rx Lease Query                       0  Tx Lease Query                    0
Rx Lease Unassigned                  0  Tx Lease Unassigned               0
Rx Lease Unknown                     0  Tx Lease Unknown                  0
Rx Lease Active                      0  Tx Lease Active                   0
```

Chapter 12 Diagnostic Commands of CLI

Diagnostic

This section provides a set of basic system diagnosis. It let users know that whether the system is health or needs to be fixed. The basic system check includes ICMP Ping, ICMPv6, and VeriPHY Cable Diagnostics.

Table 11: Diagnostic Commands

Command	Function
ping	Uses the ICMP protocol's mandatory ECHO_REQUEST datagram to elicit an ICMP ECHO_RESPONSE from a host or gateway.
ping6	Uses the ICMP protocol's mandatory ECHO_REQUEST datagram to elicit an ICMP ECHO_RESPONSE from a host or gateway.
veriphy	Run cable diagnostics.

ping:

The command lets you use the ICMP protocol's mandatory ECHO_REQUEST datagram to elicit an ICMP ECHO_RESPONSE from a host or gateway

Syntax: **clear** <ip-hostname> <60-1400>

Parameter : **<ip-hostname>** Hostname or IP address

<60-1400> Size of ICMP echo packet

EXAMPLE:

```
Switch(diagnostic)# ping 192.168.6.200 80
PING server 192.168.6.200, 80 bytes of data.
88 bytes from 192.168.6.200: icmp_seq=0, time=0ms
88 bytes from 192.168.6.200: icmp_seq=1, time=0ms
88 bytes from 192.168.6.200: icmp_seq=2, time=0ms
88 bytes from 192.168.6.200: icmp_seq=3, time=0ms
88 bytes from 192.168.6.200: icmp_seq=4, time=0ms
Sent 5 packets, received 5 OK, 0 bad
Switch(diagnostic)#
```

ping6:

The command lets you use the ICMP protocol's mandatory ECHO_REQUEST datagram to elicit an ICMP ECHO_RESPONSE from a host or gateway

Syntax: **clear** <ipv6-address> <60-1400>

Parameter : **<ipv6-address>** The parameter for IPv6 address

<60-1400> Size of ICMP echo packet

EXAMPLE:

```
Switch(diagnostic)# ping6 ff06:0:0:0:0:0:c3 80
PING6 server ff06::c3, 80 bytes of data.
88 bytes from 192.168.6.200: icmp_seq=0, time=0ms
88 bytes from 192.168.6.200: icmp_seq=1, time=0ms
88 bytes from 192.168.6.200: icmp_seq=2, time=0ms
88 bytes from 192.168.6.200: icmp_seq=3, time=0ms
88 bytes from 192.168.6.200: icmp_seq=4, time=0ms
Sent 5 packets, received 5 OK, 0 bad
Switch(diagnostic)#
```

veriphy: The command lets you run cable diagnostics

Syntax: **veriphy** <port-list>

Parameter : **<port-list>** Port list, available value is from 1 to 10B format:1,3-5

EXAMPLE:

```
Switch(diagnostic)# veriphy 1
Starting VeriPHY, please wait
Port   Pair A   Length   Pair B   Length   Pair C   Length   Pair D   Length
-----  -------  -------  -------  -------  -------  -------  -------  ------
1      OK       255      OK       255      OK       255      OK       255
Switch(diagnostic)#
```

Chapter 13 Easyport Commands of CLI

Easyport

Easy Port provides a convenient way to save and share common configurations. You can use it to enable features and settings based on the location of a switch in the network and for mass configuration deployments across the network. You could easily implement included Voice IP phone, Wireless Access Point and IP Camera…etc. You can leverage configuration to run a converged voice, video, and data network considering quality of service (QoS), bandwidth, latency, and high performance.

Table 12: Easyport Commands

Command	Function
ip-cam	To set the IP-CAM Configuration on the switch
ip-phone	To set the IP-Phone Configuration on the switch
wifi-ap	To set the WIFI-AP Configuration on the switch.

ip-cam: The command lets you configure ip-cam easily on the switch through profile and rule.

Syntax: **ip-cam** <port-list> (1st level), **below: 2nd level**

<access-vlan> <1-4094>.
<admin-edge> disable/ enable.
<auto-logout> <10-3600>
<bpdu-guard> disable/ enable.
<end>
<psec-action> both/ none/ shutdown/ trap.
<psec-limit> <1-50>
<psec-mode> disable/ enable.
<quit>
<restore> default/ user
<save> start/ user
<show>
<traffic-class> <0-7>
<vlan-mode> access/ hybrid/ trunk.

Parameter : **<port-list>** Port list, available value is from 1 to 10B format:1,3-5
(1st level), below are 2nd level parameter.

Publication date: Feb., 2012
Revision A1

<access-vlan> The parameter configures access VLAN for IP Camera.

<1-4094> Access VLAN ID, available value is from 1 to 4094.

<admin-edge> The parameter lets you configure spanning tree admin-edge for IP Camera.

disable Disable spanning tree admin edge.

enable Enable spanning tree admin edge.

<bpdu-guard> The parameter lets you configure spanning tree BPDU guard for IP Camera.

disable Disable spanning tree BPDU guard.

enable Enable spanning tree BPDU guard.

<end> The parameter lets you finish Easy Port setting and return.

<psec-action> The parameter lets you configure port security action for IP Camera.

both Send a SNMP trap and shutdown the port.

none Do nothing.

shutdown Shutdown the port.

trap Send a SNMP trap.

<psec-limit> The parameter lets you configure port security maximum for IP Camera.

<1-50> Max. number of MAC addresses.

<psec-mode> The parameter lets you configure port security mode for IP Camera.

disable Disable port security.

enable Enable port security.

<show> The parameter lets you display Easy Port parameter.

<traffic-class> The parameter lets you configure traffic class for IP Camera.

<0-7> 0:Low, 7:High.

<vlan-mode> The parameter lets you configure VLAN mode for IP Camera.

access Untag all frames.

hybrid Tag all frames except VLAN ID same as PVID.

trunk Tag all frames.

NOTE: The command configuration has level rule, you need to set the port-list that you want to assign setting profile first, and then enter to 2nd level to set every parameter.

EXAMPLE:

```
Switch(easyport)# ip-cam 22
Switch(easyport/ip-cam)# vlan-mode trunk
Switch(easyport/ip-cam)# access-vlan 8
Switch(easyport/ip-cam)# traffic-class 7
Switch(easyport/ip-cam)# psec-action both
Switch(easyport/ip-cam)# psec-limit 40
Switch(easyport/ip-cam)# psec-mode enable
Switch(easyport/ip-cam)# admin-edge enable
Switch(easyport/ip-cam)# bpdu-guard enable
Switch(easyport/ip-cam)# show
Role                    : IP-CAM
Access VLAN             : 8
VLAN Mode               : Trunk
Traffic Class           : 7
Port Security Mode      : Enabled
Port Security Action    : Trap & Shutdown
Port Security Limit     : 40
STP Admin Edge          : Enabled
STP BPDU Guard          : Enabled

Switch(easyport/ip-cam)#
```

ip-phone: The command lets you configure ip-phone easily on the switch through profile and rule

Syntax: **ip-phone** <port-list> (1st level), **below: 2nd level**

<access-vlan> <1-4094>.

<admin-edge> disable/ enable.

<auto-logout> <10-3600>

<bpdu-guard> disable/ enable.

<end>

<psec-action> both/ none/ shutdown/ trap.

<psec-limit> <1-50>

<psec-mode> disable/ enable.

<show>

<traffic-class> <0-7>

<vlan-mode> access/ hybrid/ trunk.

<voice-vlan> <1-4094>

Parameter : **<port-list>** Port list, available value is from 1 to 10B format:1,3-5 **(1st level), below are 2nd level parameter.**

<access-vlan> The parameter lets you configure access VLAN for IP Camera.

<1-4094> Access VLAN ID, available value is from 1 to 4094.

<admin-edge> The parameter lets you to configure spanning tree admin-edge for IP Camera.

disable Disable spanning tree admin edge.

enable Enable spanning tree admin edge.

<bpdu-guard> The parameter lets you configure spanning tree BPDU guard for IP Camera.

disable Disable spanning tree BPDU guard.

enable Enable spanning tree BPDU guard.

<end> The parameter lets you finish Easy Port setting and return.

<psec-action> The parameter lets you configure port security action for IP Camera.

both Send a SNMP trap and shutdown the port.

none Do nothing.

shutdown Shutdown the port.

trap Send a SNMP trap.

<psec-limit> The parameter lets you configure port security maximum for IP Camera.

<1-50> Max. number of MAC addresses.

<psec-mode> The parameter lets you configure port security mode for IP Camera.

disable Disable port security.

enable Enable port security.

<show> The parameter lets you to display Easy Port parameter.

<traffic-class> The parameter lets you configure traffic class for IP Camera.

<0-7> 0:Low, 7:High.

<vlan-mode> The parameter lets you configure VLAN mode for IP Camera.

access Untag all frames.

hybrid Tag all frames except VLAN ID same as PVID.

trunk Tag all frames.

<voice-mode> The parameter lets you configure VLAN mode for IP Camera.

<1-4094> Voice VLAN ID, available value is from 1 to 4094.

EXAMPLE:

```
witch(easyport)# ip-phone 22
Switch(easyport/ip-phone)# access-vlan 20
Switch(easyport/ip-phone)# voice-vlan 20
Switch(easyport/ip-phone)# psec-mode enable
Switch(easyport/ip-phone)# psec-limit 30
Switch(easyport/ip-phone)# traffic-class 7
```

```
Switch(easyport/ip-phone)# vlan-mode access
Switch(easyport/ip-phone)# psec-action both
Switch(easyport/ip-phone)# save start
Switch(easyport/ip-phone)# show
Role                    : IP-Phone
Access VLAN             : 20
VLAN Mode               : Access
Voice VLAN              : 20
Traffic Class           : 7
Port Security Mode      : Enabled
Port Security Action    : Trap & Shutdown
Port Security Limit     : 30
STP Admin Edge          : Enabled
STP BPDU Guard          : Enabled

Switch(easyport/ip-phone)#
```

wifi-ap: The command lets you configure WiFi-AP easily on the switch through profile and rule

Syntax: **wifi-ap** <port-list> (1st level), **below: 2nd level**

<access-vlan> <1-4094>.

<admin-edge> disable/ enable.

<auto-logout> <10-3600>

<bpdu-guard> disable/ enable.

<end>

<psec-action> both/ none/ shutdown/ trap.

<psec-limit> <1-50>

<psec-mode> disable/ enable.

<show>

<traffic-class> <0-7>

<vlan-mode> access/ hybrid/ trunk.

Parameter : **<port-list>** Port list, available value is from 1 to 10B format:1,3-5 **(1st level), below are 2nd level parameter.**

<access-vlan> The parameter lets you configure access VLAN for IP Camera.

<1-4094> Access VLAN ID, available value is from 1 to 4094.

<admin-edge> The parameter lets you configure spanning tree admin-edge for IP Camera.

disable Disable spanning tree admin edge.

enable Enable spanning tree admin edge.

<bpdu-guard> The parameter lets you configure spanning tree BPDU guard for IP Camera.

disable Disable spanning tree BPDU guard.

enable Enable spanning tree BPDU guard.

<end> The parameter lets you finish Easy Port setting and return.

<psec-action> The parameter lets you configure port security action for IP Camera.

both Send a SNMP trap and shutdown the port.

none Do nothing.

shutdown Shutdown the port.

trap Send a SNMP trap.

<psec-limit> The parameter lets you configure port security maximum for IP Camera.

<1-50> Max. number of MAC addresses.

<psec-mode> The parameter lets you configure port security mode for IP Camera.

disable Disable port security.

enable Enable port security.

<show> The parameter lets you display Easy Port parameter.

<traffic-class> The parameter lets you configure traffic class for IP Camera.

<0-7> 0:Low, 7:High.

<vlan-mode> The parameter lets you configure VLAN mode for IP Camera.

access Untag all frames.

hybrid Tag all frames except VLAN ID same as PVID.

trunk Tag all frames.

EXAMPLE:

```
Switch(easyport/wifi-ap)# access-vlan 55
Switch(easyport/wifi-ap)# admin-edge disable
Switch(easyport/wifi-ap)# bpdu-guard disable
Switch(easyport/wifi-ap)# psec-action both
Switch(easyport/wifi-ap)# psec-limit 30
Switch(easyport/wifi-ap)# psec-mode enable
Switch(easyport/wifi-ap)# traffic-class 4
Switch(easyport/wifi-ap)# vlan-mode hybrid
Switch(easyport/wifi-ap)# show
Role                    : WIFI-AP
Access VLAN             : 55
VLAN Mode               : Hybrid
Traffic Class           : 4
Port Security Mode      : Enabled
Port Security Action    : Trap & Shutdown
Port Security Limit     : 30
STP Admin Edge          : Disabled
STP BPDU Guard          : Disabled

Switch(easyport/wifi-ap)#
```

Chapter 14 Event Commands of CLI

Event

The function is used to set an Alarm trap and get the Event log. The Trap Events Configuration function is used to enable the switch to send out the trap information while pre-defined trap events occur.

Table 13: Event Commands

Command	Function
group	Configure trap event severity level
show	Show trap event configuration

group:

The command lets you configure trap event severity level

Syntax: **Group** <group-name><port-list>

Parameter : **<group-name>** Trap event group name
<0-7> Severity level
<0> Emergency: system is unusable
<1> Alert: action must be taken immediately
<2> Critical: critical conditions
<3> Error: error conditions
<4> Warning: warning conditions
<5> Notice: normal but significant condition
<6> Informational: informational messages
<7> Debug: debug-level messages

EXAMPLE:

```
Switch(event)# group acl 5
Switch(event)# show
Group Name                       Severity Level
-------------------------------  ----------------
ACL                             Notice
ACL_Log                          Debug
Access_Mgmt                      Info
Auth_Failed                      Warning
Cold_Start                       Warning
Config_Info                      Info
Firmware_Upgrade                 Info
Import_Export                    Info
LACP                            Info
Passwd_Change                    Info
Port_Security                    Info
Thermal_Protect                  Info
VLAN                            Info
Warm_Start                       Warning
Switch(event)#
```


Publication date: Feb., 2012
Revision A1

Show: The command lets you display trap event configuration that you set on the switch

Syntax: **show** <cr>

Parameter : **<cr>** means press the Enter key.

EXAMPLE:

```
Switch(event)# show
Group Name                       Severity Level
-------------------------------  ----------------
ACL                              Critical
ACL_Log                          Debug
Access_Mgmt                       Info
Auth_Failed                      Warning
Cold_Start                       Warning
Config_Info                       Info
Firmware_Upgrade                  Info
Import_Export                     Info
Link_Status                      Warning
Login                            Info
Logout                           Info
Mgmt_IP_Change                    Info
Module_Change                     Notice
NAS                              Info
Passwd_Change                     Info
Port_Security                     Info
Thermal_Protect                   Info
VLAN                             Info
Warm_Start                       Warning
Switch(event)#
```

Chapter 15 Fdb Commands of CLI

Fdb (Filtering Data Base)

Filtering Data Base Configuration gathers many functions, including MAC Table Information and Static MAC Learning that cannot be categorized to some function type.

MAC table

Switching of frames is based upon the DMAC address contained in the frame. The switch builds up a table that maps MAC addresses to switch ports to direct the frames to the ports (based upon the DMAC address in the frame). This table contains both static and dynamic entries. The static entries are configured by the network administrator if the administrator wants to do a fixed mapping between the DMAC address and switch ports.

The frames also contain a MAC address (SMAC address) that shows the MAC address of the equipment sending the frame. The SMAC address is used by the switch to automatically update the MAC table with these dynamic MAC addresses. Dynamic entries are removed from the MAC table if no frame with the corresponding SMAC address has been seen after a configurable age time.

Table 14: fdb Commands

Command	Function
age-time	Configure aging time of MAC address
delete	Delete commands
flush	Flush out dynamic learned MAC address
learning	Configure learning mode of switch ports
static-mac	Configure static MAC address
show	Show MAC address table information

age-time:

The command lets you configure the age-time of MAC address

Syntax: **age-time** disable/ <10-10000>

Parameter : **disable** The parameter lets you disable automatic aging.

<10-1000000> The parameter lets you configure the available age-time value is from 10 to 1000000 secs.

EXAMPLE:

```
Switch(fdb)# age-time 1000
Switch(fdb)# show configuration
Automatic Aging : Enabled
Aging Time : 1000 seconds
Port  Learning Mode
----  -------------
1     Auto
2     Auto
3     Auto
4     Auto
……..
Switch(fdb)#
```

delete: The command lets you delete a static MAC address entry that you set on the switch.

Syntax: **delete** static-mac <mac-address> <1-4094>

Parameter : **static mac** the parameter means you want to delete a static MAC entry.

<mac-address> the parameter is MAC address, format 0a-1b-2c-3d-4e-5f.

<1-4094> VLAN ID, available value is from 1 to 4094.

EXAMPLE:

```
Switch(fdb)# static-mac 00-1F-3B-6A-3B-11 3 22
Switch(fdb)# show static-mac
No    VID   MAC Address       Ports
----  ----  ----------------  ---------------
1     3     00-1f-3b-6a-3b-11  22
Total static MAC address : 1
Switch(fdb)# delete static-mac 00-1F-3B-6A-3B-11 3
Switch(fdb)# show static-mac
Total static MAC address : 0
Switch(fdb)#
```

flush: The command lets you flush out dynamic learned MAC address

Syntax: **flush** <cr>

Parameter : **<cr>** means press the Enter key.

EXAMPLE:

```
Switch(fdb)# flush
Switch(fdb)#
```

learning:

The command lets you configure learning mode of switch ports on the switch

Syntax: **learning** <port-list> auto/ disable/ secure

Parameter :

<port-list> Its physical port available value is from 1 to 28 format: 1,3-5.

auto Learning is done automatically as soon as a frame with unknown SMAC is received.

disable The parameter lets you disable learning.

secure Only static MAC entries are learned, all other frames are dropped.

EXAMPLE:

```
Switch(fdb)# learning 2 disable
Switch(fdb)# learning 4 secure
Switch(fdb)# show configuration
Automatic Aging : Enabled
Aging Time : 300 seconds
Port  Learning Mode
----  -------------
1     Auto
2     Disabled
3     Auto
4     Secure
……..
Switch(fdb)#
```

static-mac:

The command lets you configure static MAC address on the switch

Syntax: **static-mac** <mac-address> <1-4094> <port-list>/block

Parameter :

<mac-address> the parameter is MAC address, format 0a-1b-2c-3d-4e-5f.

<1-4094> VLAN ID, available value is from 1 to 4094.

<port-list> Its physical port available value is from 1 to 28 format: 1,3-5.

block The parameter lets you block the specific MAC address for all ports.

EXAMPLE:

```
Switch(fdb)# static-mac 00-1F-3B-6A-3B-11 33 2
Switch(fdb)# show static-mac
No    VID   MAC Address       Ports
----  ----  ----------------  ---------------
1     33    00-1f-3b-6a-3b-11  2
Total static MAC address : 1
Switch(fdb)#
```

show: The command lets you display the MAC Table or configuration information set on the switch

Syntax: **show** configuration <cr>.

show mac-table <mac-address> <cr>

show mac-table port <port-list> <cr>

show mac-table vid <1-4094> <cr>

show static-mac <cr>

Parameter : **configuration** Show MAC address table configuration.

mac-table Show MAC address table.

<mac-address> the parameter is MAC address, format 0a-1b-2c-3d-4e-5f.

<port-list> Its physical port available value is from 1 to 28 format: 1,3-5.

<1-4094> VLAN ID, available value is from 1 to 4094.

static-mac Show static MAC address.

<cr> means press the Enter key.

EXAMPLE:

```
Switch(fdb)# static-mac 00-1F-3B-6A-3B-11 33 2
Switch(fdb)# show static-mac
No    VID   MAC Address       Ports
----  ----  ----------------  ---------------
1     33    00-1f-3b-6a-3b-11  2
Total static MAC address : 1
Switch(fdb)#
```

Chapter 16 Firmware Commands of CLI

firmware

This section describes how to upgrade Firmware. The Switch can be enhanced with more value-added functions by installing firmware upgrades.

Table 15: firmware Commands

Command	Function
show	Show information about active and alternate firmware images
swap	Activate the alternate firmware image
upgrade	Upgrade system firmware

show:

The command lets you display the active and alternate firmware image version information

Syntax: **show** <cr>

Parameter : **<cr>** means press the Enter key.

EXAMPLE:

```
Switch(firmware)# show
Active Image
------------
Image     : managed
Version   : GEPoEL2-ESW28KX (standalone) v1.14
Date      : 2011-12-21T10:41:33+08:00

Alternate Image
---------------
Image     : managed.bk
Version   : GEPoEL2-ESW28KX (standalone) v1.13
Date      : 2011-12-08T11:37:00+08:00

Switch(firmware)#
```

swap:

The command lets you swap the active firmware image to alternate firmware image or reverse between them

Syntax: **swap** <cr>

Parameter : **<cr>** means press the Enter key.

EXAMPLE:

```
Switch(firmware)# swap
... Erase from 0x40fd0000-0x40fdffff: .
... Program from 0x87ff0000-0x88000000 to 0x40fd0000: .
... Program from 0x87ff000a-0x87ff000c to 0x40fd000a: .
Alternate image activated, now rebooting.
Switch(firmware)# +M25PXX : Init device with JEDEC ID 0xC22018.
Jaguar-1 board detected (VSC7460 Rev. B).

RedBoot(tm) bootstrap and debug environment [ROMRAM]
Non-certified release, version 1_12-Vitesse - built 12:04:16, Aug  8 2011

Copyright (C) 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Free Software Foundation, Inc.
RedBoot is free software, covered by the eCos license, derived from the
GNU General Public License. You are welcome to change it and/or distribute
copies of it under certain conditions. Under the license terms, RedBoot's
source code and full license terms must have been made available to you.
Redboot comes with ABSOLUTELY NO WARRANTY.

Platform: VCore-III (MIPS32 24KEc) JAGUAR
RAM: 0x80000000-0x88000000 [0x80020c88-0x87fe1000 available]
FLASH: 0x40000000-0x40ffffff, 256 x 0x10000 blocks
== Executing boot script in 1.000 seconds - enter ^C to abort
RedBoot> fis load -d managed
Image loaded from 0x80040000-0x807083f8
RedBoot> go

Username: W snmp 00:00:02 23/snmp_conf_read_stack#4909: Warning: version mismatc
h, creating defaults
W snmp 00:00:02 23/snmp_conf_read_stack#5001: Warning: version mismatch, creatin
g defaults
W snmp 00:00:02 23/snmp_conf_read_stack#5043: Warning: conf_sec_open failed or
s
ize mismatch, creating defaults
W snmp 00:00:02 23/snmp_conf_read_stack#5093: Warning: version mismatch, creatin
g defaults
W priv_lvl 00:00:02 23/VTSS_PRIVILEGE_conf_read_stack#432: Warning: conf_sec_ope
n failed or size mismatch, creating defaults
W port 00:00:03 23/port_conf_read#2766: Warning: conf_sec_open failed or size mi
smatch, creating defaults

Username: admin
Password:
Login in progress...
Switch# firmware
Switch(firmware)# show
Active Image
------------
Image     : managed
Version   : GEPoEL2-ESW28KX (standalone) v1.13
Date      : 2011-12-08T11:37:00+08:00

Alternate Image
---------------
Image     : managed.bk
Version   : GEPoEL2-ESW28KX (standalone) v1.14
Date      : 2011-12-21T10:41:33+08:00

Switch(firmware)#
```

upgrade : The command lets you upgrade the system firmware to active or alternate division

Syntax: **upgrade** <ipv6-address> <word>

upgrade <ip-hostname> <word>

Parameter : **<ipv6-address>** TFTP server ipv6 address. IPv6 address is in 128-bit records represented as eight fields of up to four hexadecimal digits with a colon separating each field (:). For example, 'fe80::215:c5ff:fe03:4dc7'. The symbol '::' is a special syntax that can be used as a shorthand way of representing multiple 16-bit groups of contiguous zeros, but it can only appear once. It also used following a legal IPv4 address. For example, '::192.1.2.34'.

<ip-hostname> TFTP server ip address or hostname

<word> Firmware image file name

NOTE: This page facilitates an update of the firmware controlling the switch. Uploading software will update all managed switches to the location of a software image and click. After the software image is uploaded, a page announces that the firmware update is initiated. After about a minute, the firmware is updated and the switch restarts.

WARNING: While the firmware is being updated, Web access appears to be defunct. The front LED flashes Green/Off with a frequency of 10 Hz while the firmware update is in progress. Do not restart or power off the device at this time or the switch may fail to function afterwards.

EXAMPLE:

```
Switch(firmware)# upgrade 192.168.1.100 managed.bk
Switch(firmware)# show
Active Image
------------
Image     : managed
Version   : GEPoEL2-ESW28KX (standalone) v1.13
Date      : 2011-12-08T11:37:00+08:00

Alternate Image
---------------
Image     : managed.bk
Version   : GEPoEL2-ESW28KX (standalone) v1.14
Date      : 2011-12-21T10:41:33+08:00

Switch(firmware)#
```

Chapter 17 GARP Commands of CLI

GARP

The Generic Attribute Registration Protocol (GARP) provides a generic framework whereby devices in a bridged LAN, e.g. end stations and switches, can register and de-register attribute values, such as VLAN Identifiers, with each other. In doing so, the attributes are propagated to devices in the bridged LAN, and these devices form a ¡°reachability¡± tree that is a subset of an active topology. GARP defines the architecture, rules of operation, state machines, and variables for the registration and de-registration of attribute values.

A GARP participation in a switch or an end station consists of a GARP application component, and a GARP Information Declaration (GID) component associated with each port or the switch. The propagation of information between GARP participants for the same application in a bridge is carried out by the GARP Information Propagation (GIP) component. Protocol exchanges take place between GARP participants by means of LLC Type 1 services, using the group MAC address and PDU format defined for the GARP application concerned.

Table 16: garp Commands

Command	Function
applicant	Enable/Diable applicant administrative control
join-time	Set the GARP join timer configuration
leave-all	Set the GARP leave all timer configuration
leave-time	Set the GARP leave timer configuration
show	Show the GARP configuration

applicant:

The command lets you enable or disable the applicant administrative control

Syntax: **applicant** <port-list> <non-participant/ normal-participant>

Parameter : **<port-list>** Port list, available value is from 1 to 14 format: 1,3-5.

<non-participant> Set applicant administrative control to non-participant

<normal-participant> Disable applicant administrative control to normal-participant.

EXAMPLE:

```
Switch(garp)# applicant 3 non-participant
Switch(garp)#
```

join-time: The command lets you set the GARP join timer configuration on the switch

Syntax: **join-time** <port-list> <time-value>

Parameter : **<port-list>** Port list, available value is from 1 to 14 format: 1,3-5.

<time-value> join time value, available value is from 200 to 400 seconds.

EXAMPLE:

```
Switch(garp)# join-time 3-5 200
Error! Set jointimer failed
```

NOTE: If you didn't set the GARP environment already, then the switch will show "Set jointimer failed".

leave-all: The command lets you set the GARP leave all timer configurations on the switch

Syntax: **leave-all** <port-list> <timer-value>

Parameter : **<port-list>** Port list, available value is from 1 to 14 format: 1,3-5.

<timer-value> leave all time value, available value is from 10000 to 100000 seconds.

EXAMPLE:

```
Switch(garp)# leave-all 3-5 10000
Error! Set leavealltimer failed
Switch(garp)#
```

NOTE: If you didn't set the GARP environment already, then the switch will show "Set leave all timer failed".

leave-time: The command lets you set GARP leave timer configuration on the switch

Syntax: **leave-time** <port-list> <timer-value>

Parameter : **<port-list>** Port list, available value is from 1 to 14 format: 1,3-5.

<timer-value> leave all time value, available value is from 10000 to

100000 seconds.

EXAMPLE:

```
Switch(garp)# leave-time 3-5 600
Error! Set leavetimer failed
Switch(garp)#
```

NOTE: If you didn't set the GARP environment already, then the switch will show "Set leavetimer failed".

show: The command lets you display the GARP configuration that you set on the switch

Syntax: **show** <statistic> <port-list>

Parameter : **<statistic>** Show the basic GARP port statistics

<port-list> Port list, available value is from 1 to 14 format: 1,3-5.

EXAMPLE:

```
Switch(garp)# show statistic 3-5 ?
  <cr>
Switch(garp)# show statistic 3-5
Port  Peer MAC          Failed Count
----  ----------------  ------------
3     -                 -
4     -                 -
5     -                 -
Switch(garp)#
```

NOTE: If you didn't set the GARP environment already, then the switch will show "empty field value".

Chapter 18 GVRP Commands of CLI

GVRP

GVRP is an application based on Generic Attribute Registration Protocol (GARP), mainly used to automatically and dynamically maintain the group membership information of the VLANs. The GVRP offers the function providing the VLAN registration service through a GARP application. It makes use of GARP Information Declaration (GID) to maintain the ports associated with their attribute database and GARP Information Propagation (GIP) to communicate among switches and end stations. With GID information and GIP, GVRP state machines maintain the contents of Dynamic VLAN Registration Entries for each VLAN and propagate this information to other GVRP-aware devices to setup and update their knowledge database, the set of VLANs associated with currently active members, and through which ports these members can be reached.

Table 17: gvrp Commands

Command	Function
clear	Clear the basic GVRP port statistics
control	Enable/Disable GVRP globally
mode	Enable/Disable GVRP on port
rrole	Enable/Disable GVRP restricted role on port
show	Show the GVRP configuration

clear: The command lets you clear the basic GVRP port statistics recorded by the switch

Syntax: **clear** <port-list>

Parameter : **<port-list>** Port list, available value is from 1 to 14 format: 1,3-5.

EXAMPLE:

```
Switch(gvrp)# clear 3-5

Switch(gvrp)#
```

NOTE: If you set the GVRP on a port, you can show the port GVRP statistics information or clear all records on the port.

control: The command lets you enable or disable the GVRP globally

Syntax: **control** disable/ enable

Parameter : **disable** The parameter lets you disable GVRP function globally.

enable The parameter lets you enable GVRP function globally.

EXAMPLE:

```
Switch(gvrp)# control enable
Switch(gvrp)#
```

mode: The command lets you enable or disable the GVRP function on a port

Syntax: **mode** <port-list> disable/ enable

Parameter : **<port-list>** Port list, available value is from 1 to 14 format: 1,3-5.

disable The parameter lets you disable GVRP function on a port.

enable The parameter lets you enable GVRP function on a port.

EXAMPLE:

```
Switch(gvrp)# mode 3-5 enable
Switch(gvrp)#
```

rrole: The command lets you enable or disable the GVRP restricted role on port

Syntax: **mode** <port-list> disable/ enable

Parameter : **<port-list>** Port list, available value is from 1 to 14 format: 1,3-5.

disable The parameter disables GVRP function on port.

enable The parameter enables GVRP function on port.

EXAMPLE:

```
Switch(gvrp)# rrole 3-5 enable
Switch(gvrp)#
```

show: The command lets you display the GVRP function information

Syntax: **show** config / statistics

Parameter : **config** Show the GVRP configuration.

statistics Show the basic GVRP port statistics.

EXAMPLE:

```
Switch(gvrp)# show config
GVRP global mode : Enabled

Port  Mode      Restricted Role
----  ---------  ---------------
1     Diabled    Diabled
2     Diabled    Diabled
3     Enabled    Enabled
4     Enabled    Enabled
5     Enabled    Enabled
6     Diabled    Diabled
7     Diabled    Diabled
8     Diabled    Diabled
9     Diabled    Diabled
……..
Switch(gvrp)#
Switch(gvrp)# show statistics 1-10
Port  Joins Tx Count       Leaves Tx Count
----  --------------------  --------------------
1     0                    0
2     0                    0
3     0                    0
4     0                    0
5     0                    0
6     0                    0
7     0                    0
8     0                    0
9     0                    0
……
Switch(gvrp)#
```

Chapter 19 HTTPs Commands of CLI

Https

This section shows you how to use HTTPS to securely access the Switch. HTTPS is a secure communication protocol that combines authentication and data encryption to provide secure encrypted communication via the browser.

Table 18: HTTPs Commands

Command	Function
mode	Configure the HTTPS mode
redirect	Configure the HTTPS redirect mode
show	Show the HTTPs configuration

mode:

The command lets you configure the HTTPs enable or disable on the switch

Syntax: **mode** disable/enable

Parameter : **disable** The parameter lets you disable HTTPS mode operation

enable The parameter lets you enable HTTPS mode operation

EXAMPLE:

```
Switch(https)# mode enable
Switch(https)#
```

redirect:

The command lets you configure the HTTPs redirect mode enable or disable

Syntax: **redirect** disable/enable

Parameter : **disable** The parameter lets you disable redirect mode operation

enable The parameter lets you enable redirect mode operation

EXAMPLE:

```
Switch(https)# redirect enable
Switch(https)#
```

show: The command lets you display the HTTPs all setting on the switch or status information

Syntax: **show** <cr>

Parameter : **<cr>** means press the Enter key.

EXAMPLE:

```
Switch(https)# show
HTTPS Mode          : Enabled
HTTPS Redirect Mode : Enabled
Switch(https)#
```

Chapter 20 IGMP Commands of CLI

IGMP

The function establishes the multicast groups to forward the multicast packet to the member ports, and avoids wasting the bandwidth while IP multicast packets are running over the network. This is because a switch that does not support IGMP or IGMP Snooping cannot tell the multicast packet from the broadcast packet, so it can only treat them all as broadcast packets. Without IGMP Snooping, the multicast packet forwarding function is plain and nothing is different from broadcast packet.

A switch that supports IGMP Snooping with the query, report, and leave functions, a type of packet exchanged between IP Multicast Router/Switch and IP Multicast Host, can update the information of the Multicast table when a member (port) joins or leaves an IP Multicast Destination Address. With this function, once a switch receives an IP multicast packet, it will forward the packet to the members who previously joined a specified IP multicast group.

The packets will be discarded by the IGMP Snooping if the user transmits multicast packets to the multicast group that had not been built up in advance. IGMP mode enables the switch to issue IGMP function that enables IGMP proxy or snooping on the switch, which connects to a router closer to the root of the tree. This interface is the upstream interface. The router on the upstream interface should be running IGMP.

Table 19: IGMP Commands

Command	Function
compatibility	Set the Versions of IGMP Operating on Hosts and Routers
delete	Delete commands that you set on the switch
fast-leave	Set per-port Fast Leave
filtering	The IP Multicast Group that will be filtered
flooding	Set IGMP Flooding Mode
lmqi	Set per-VLAN Last Member Query Interval
proxy	Set IGMP Proxy Mode
qi	Set per-VLAN Query Interval
qri	Set per-VLAN Query Response Interval
querier	Set per-VLAN IGMP Querier
router	Set Router Port
rv	Set per-VLAN Robustness Variable
show	Show IGMP Snooping Information

snooping	Set IGMP Snooping Mode
ssm-range	Set IGMP SSM Range
state	Enable/Disable per-VLAN IGMP Snooping Mode
throttling	Set per-port Throttling
uri	Set per-VLAN Unsolicited Report Interval

compatibility:

The command lets you configure the compatibility parameters on the switch

Syntax: **compatibility** <vlan-list> Forced-IGMPv1/ Forced-IGMPv2/ Forced-IGMPv3 /IGMP-Auto

Parameter : **<vlan-list>** VLAN list, available value is from 1 to 4094 format: 1, 3-5.

Forced-IGMPv1 : Set IGMPv1 of IGMP operating on hosts and routers

Forced-IGMPv2 : Set IGMPv2 of IGMP operating on hosts and routers

Forced-IGMPv3 : Set IGMPv3 of IGMP operating on hosts and routers

IGMP-Auto: Set auto mode of IGMP operating on hosts and routers

EXAMPLE:

```
Switch(igmp)# compatibility 1 IGMP-Auto
Switch(igmp)# show status 1
     Querier Rx        Tx        Rx        Rx        Rx        Rx
VID   Status  Query     Query     V1 Join   V2 Join   V3 Join   V2 Leave
----  ------  ---------- ---------- ---------- ---------- ----------
----------
Switch(igmp)#
```

delete:

The command lets you delete the setting on the switch

Syntax: **delete** <port-list> <ipmc-address>

Parameter : **<port-list>** The switch physical port, available value is from 1 to 28 format: 1,3-5.

ipmc-address: Type which ipmc-address to delete IGMP filtering group. Available range from 224.0.0.0 to 239.255.255.255

EXAMPLE:

```
Switch(igmp)# delete  3 224.0.0.2
Switch(igmp)#
```

NOTE: If you type illegal ipmc-address, then switch won't allow you to delete it. The screen will display e.g. **Invalid argument "223.224.223.224"**

fast-leave:

The command lets you configure fast-leave per-port on the switch

Syntax: **fast-leave** <port-list> disable/ enable

Parameter : **<port-list>** The switch physical port, available value is from 1 to 28 format: 1,3-5.

disable: Disable the port fast-leave function.

enable: Enable the port fast-leave function.

NOTE: When you enable IGMP fast-leave processing, the switch immediately removes a port when it detects an IGMP version 2 leave message on that port.

EXAMPLE:

```
Switch(igmp)# fast-leave 1 disable
Switch(igmp)#
```

filtering:

The command lets you configure filtering and the IP Multicast Group that will be filtered

Syntax: **filtering** <port-list> <ipmc-address>

Parameter : **<port-list>** The switch physical port, available value is from 1 to 28, format: 1,3-5.

ipmc-address: Type which ipmc-address to delete IGMP filtering group. Available range from 224.0.0.0 to 239.255.255.255

EXAMPLE:

```
Switch(igmp)# filtering 5 224.0.0.1
Switch(igmp)#
```

NOTE: If you type illegal ipmc-address, then switch won't allow you to filter it. The screen will display e.g. **Invalid argument "223.224.223.224"**

flooding:

The command lets you configure the flooding mode on the switch

Syntax: **flooding** enable/ disable

Parameter : **disable:** To disable the flooding function.

enable: To enable the flooding function.

EXAMPLE:

```
Switch(igmp)# flooding enable
Switch(igmp)# show config
IGMP Snooping : Disabled

IGMP Flooding Control : Enabled
IGMP Proxy : Disabled

IGMP SSM Range: 232.0.0.0/8
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  ----------------------
1     Disabled  No              Disabled    Unlimited
2     Disabled  No              Disabled    Unlimited
3     Disabled  No              Disabled    Unlimited
4     Disabled  No              Disabled    Unlimited
5     Disabled  No              Disabled    Unlimited
6     Disabled  No              Disabled    Unlimited
7     Disabled  No              Disabled    Unlimited
8     Disabled  No              Disabled    Unlimited
9     Disabled  No              Disabled    Unlimited
…….
Switch(igmp)#
```

lmqi:

The command lets you set per-VLAN Last Member Query Interval on the switch

Syntax: **lmqi** <vlan-list> <0-31744>

Parameter : **<vlan-list>:** VLAN list, available value is from 1 to 4094, and the format: 1,3-5.

<0-31744>: Range: 0–31744 tenths of sec, Default:100 tenths of sec

EXAMPLE:

```
Switch(igmp)# lmqi 45 379
Switch(igmp)#
```

proxy:

The command lets you enable or disable the IGMP proxy function on the switch

Syntax: **proxy** enable/ disable

Parameter : **disable:** To disable the IGMP proxy function.

enable: To enable the IGMP proxy function.

EXAMPLE:

```
Switch(igmp)# proxy enable
Switch(igmp)# show config
```

```
IGMP Snooping : Disabled

IGMP Flooding Control : Enabled
IGMP Proxy : Enabled

IGMP SSM Range: 232.0.0.0/8
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  ----------------------
1     Disabled  No              Disabled    Unlimited
2     Disabled  No              Disabled    Unlimited
3     Disabled  No              Disabled    Unlimited
4     Disabled  No              Disabled    Unlimited
5     Disabled  No              Disabled    Unlimited
6     Disabled  No              Disabled    Unlimited
7     Disabled  No              Disabled    Unlimited
8     Disabled  No              Disabled    Unlimited
9     Disabled  No              Disabled    Unlimited
…….
Switch(igmp)#
```

Chapter 21 IP Commands of CLI

IP

IP is an acronym for Internet Protocol. It is a protocol used for communicating data across an internet network.

IP is a "best effort" system, which means that no packet of information sent over is assured to reach its destination in the same condition it was sent. Each device connected to a Local Area Network (LAN) or Wide Area Network (WAN) is given an Internet Protocol address, and this IP address is used to identify the device uniquely among all other devices connected to the extended network.

The current version of the Internet protocol is IPv4, which has 32-bits Internet Protocol addresses allowing for in excess of four billion unique addresses. This number is reduced drastically by the practice of webmasters taking addresses in large blocks, the bulk of which remain unused. There is a rather substantial movement to adopt a new version of the Internet Protocol, IPv6, which would have 128-bits Internet Protocol addresses. This number can be represented roughly by a three with thirty-nine zeroes after it. However, IPv4 is still the protocol of choice for most of the Internet.

Table 20: IP Commands

Command	Function
dhcp	Enable/Disable DHCP client
dns-proxy	Enable/Disable DNS proxy
mgmt-vlan	Set the management VLAN ID
name-server	Set DNS IP address
setup	Set the IP address
show	Show ip information

dhcp: The command lets you configure the DHCP client

Syntax: **dhcp** disable/ enable/ renew

Parameter : **disable:** Disable DHCP client

enable: Enable DHCP client

renew: Force DHCP client to renew IP address

EXAMPLE:

```
Switch(ip)# dhcp enable
Switch(ip)# show
                     Configured      Current
                     --------------- ---------------
DHCP Client          : Enabled
IP Address           : 192.168.20.1    0.0.0.0
IP Mask              : 255.255.255.0   0.0.0.0
IP Gateway           : 192.168.20.250  0.0.0.0
VLAN ID              : 1               1
DNS Server           : 0.0.0.0         0.0.0.0
DNS Proxy            : Enabled
```

dns-proxy: The command lets you configure DNS proxy

Syntax: **dns-proxy** disable/ enable

Parameter : **disable:** Disable DNS proxy operation

enable: Enable DNS proxy operation

EXAMPLE:

```
Switch(ip)# dns-proxy enable
Switch(ip)# show
                     Configured      Current
                     --------------- ---------------
DHCP Client          : Enabled
IP Address           : 192.168.20.1    0.0.0.0
IP Mask              : 255.255.255.0   0.0.0.0
IP Gateway           : 192.168.20.250  0.0.0.0
VLAN ID              : 1               1
DNS Server           : 0.0.0.0         0.0.0.0
DNS Proxy            : Enabled
```

mgmt-vlan: The command lets you set the management VLAN ID

Syntax: **mgmt-vlan** <1-4094> disable/ enable

Parameter : **<1-4094>** Management VLAN ID, available value is from 1 to 4094

EXAMPLE:

```
Switch(ip)# mgmt-vlan 2
Switch(ip)# show
                     Configured      Current
                     --------------- ---------------
DHCP Client          : Disabled
IP Address           : 192.168.20.1    192.168.20.1
IP Mask              : 255.255.255.0   255.255.255.0
IP Gateway           : 192.168.20.250  192.168.20.250
VLAN ID              : 2               2
DNS Server           : 0.0.0.0         0.0.0.0
DNS Proxy            : Disabled
```

name-server: The command lets you set DNS IP address

Syntax: **name-server** <ip-address>

Parameter : **<ip-address>** DNS IP address

EXAMPLE:

```
Switch(ip)# name-server 192.168.20.10
Switch(ip)# show
                     Configured      Current
                     --------------- ---------------
DHCP Client          : Disabled
IP Address           : 192.168.20.1    192.168.20.1
IP Mask              : 255.255.255.0   255.255.255.0
IP Gateway           : 192.168.20.250  192.168.20.250
VLAN ID              : 2               2
DNS Server           : 192.168.20.10   192.168.20.10
DNS Proxy            : Disabled
```

setup: The command lets you to configure the IP address

Syntax: **setup <ip-address> <ip-mask> <ip-address>**

Parameter : **<ip-address>** IP address

<ip-mask> IP subnet mask

<ip-address> Gateway IP address

EXAMPLE:

```
Switch(ip)# setup 192.168.20.10 255.255.255.0 192.168.20.250
Switch(ip)# show
                     Configured      Current
                     --------------- ---------------
DHCP Client          : Disabled
IP Address           : 192.168.20.10   192.168.20.10
IP Mask              : 255.255.255.0   255.255.255.0
IP Gateway           : 192.168.20.250  192.168.20.250
VLAN ID              : 2               2
DNS Server           : 0.0.0.0          0.0.0.0
DNS Proxy            : Disabled
```

NOTE: The IP address and the router must be on the same subnet.

show: The command lets you show IP information

Syntax: **show** <cr>

Parameter : **<cr>** means press the Enter key.

EXAMPLE:

```
Switch(ip)# show
                    Configured      Current
                    --------------- ---------------
DHCP Client         : Disabled
IP Address          : 192.168.20.10   192.168.20.10
IP Mask             : 255.255.255.0   255.255.255.0
IP Gateway          : 192.168.20.250  192.168.20.250
VLAN ID             : 2               2
DNS Server          : 0.0.0.0         0.0.0.0
DNS Proxy           : Disabled
```

Chapter 22 IP-Source-Guard Commands of CLI

IP-Source -Guard

The section describes how to configure the IP Source Guard detail parameters of the switch. You could use the IP Source Guard configure to enable or disable the switch port.

Table 21: IP-Source-Guard Commands

Command	Function
add	Add or modify IP source guard static entry
delete	Delete IP source guard static entry
limit	IP source guard port limitation for dynamic entries
mode	Configure IP source guard mode
port-mode	Configure IP source guard port mode
show	Show IP source guard information
translate	Translate IP source guard dynamic entries into static entries

add:

The command lets you add or modify IP source guard static entry.

Syntax: **add** <port-list> <1-4094> <ip-address> <ip-mask>

Parameter : **<port-list>** available value is from the switch physical port density, format: 1,3-5

<1-4094>: VLAN ID, available value is from 1 to 4094

<ip-address>: IP address allowed for doing IP source guard

<ip-mask>: IP mask for allowed IP address

EXAMPLE:

```
Switch(ip-source-guard)# add 1 1 192.168.1.1 255.255.0.0
Switch(ip-source-guard)# show binding-table
Type     Port  VLAN  IP Address       MAC Address
-------  ----  ----  ---------------  -----------------
Static      1     1  192.168.1.1      5a-80-70-64-60-80
```

delete:

The command lets you delete IP source guard static entry

Syntax: **delete** <port-list> <1-4094> <ip-address> <ip-mask>

Parameter : **<port-list>:** available value is from 1 to 28 format: 1,3-5

<1-4094>: VLAN ID, available value is from 1 to 4094

<ip-address>: IP address

<ip-mask>: IP mask for allowed IP address

EXAMPLE:

```
Switch(ip-source-guard)# delete 1 1 192.168.1.1 255.255.255.0
Switch(ip-source-guard)# show binding-table
Type     Port  VLAN  IP Address       MAC Address
-------  ----  ----  ---------------  -----------------
```

limit: This command lets you set up IP source guard port limitation for dynamic entries.

Syntax: **limit** <port-list> <0-2>/ Unlimited

Parameter : **<port-list>** available value is from the switch physical port density, format: 1,3-5

<0-2>: Specify the maximum number of dynamic clients that can be learned on given port. If the port mode is enabled and the value of max dynamic client is equal to 0, it means only allow the IP packets forwarding that are matched in static entries on the specific port unlimited**.**

Unlimited: dynamic clients

EXAMPLE:

```
Switch(ip-source-guard)# limit 1 0
Switch(ip-source-guard)# show config

IP Source Guard Mode : Disabled

Port  Port Mode  Dynamic Entry Limit
----  ---------  -------------------
1     Disabled   0
2     Disabled   unlimited
3     Disabled   unlimited
4     Disabled   unlimited
5     Disabled   unlimited
6     Disabled   unlimited
7     Disabled   unlimited
8     Disabled   unlimited
9     Disabled   unlimited
10    Disabled   unlimited
11    Disabled   unlimited
12    Disabled   unlimited
13    Disabled   unlimited
14    Disabled   unlimited
15    Disabled   unlimited
16    Disabled   unlimited
17    Disabled   unlimited
18    Disabled   unlimited
19    Disabled   unlimited
20    Disabled   unlimited
21    Disabled   unlimited
22    Disabled   unlimited
23    Disabled   unlimited
24    Disabled   unlimited
25    Disabled   unlimited
26    Disabled   unlimited
27    Disabled   unlimited
28    Disabled   unlimited
```

mode: This command lets you configure IP source guard mode.

Syntax: **mode** enable/disable

Parameter : **disable:** Globally disable IP source guard mode

enable: Globally enable IP source guard mode. All configured ACEs will be lost when the mode is enabled.

EXAMPLE:

```
Switch(ip-source-guard)# mode enable
Switch(ip-source-guard)# show config

IP Source Guard Mode : Enabled

Port  Port Mode  Dynamic Entry Limit
----  ---------  -------------------
1     Disabled   0
2     Disabled   unlimited
3     Disabled   unlimited
4     Disabled   unlimited
5     Disabled   unlimited
6     Disabled   unlimited
7     Disabled   unlimited
8     Disabled   unlimited
9     Disabled   unlimited
10    Disabled   unlimited
11    Disabled   unlimited
12    Disabled   unlimited
13    Disabled   unlimited
14    Disabled   unlimited
15    Disabled   unlimited
16    Disabled   unlimited
17    Disabled   unlimited
18    Disabled   unlimited
19    Disabled   unlimited
20    Disabled   unlimited
21    Disabled   unlimited
22    Disabled   unlimited
23    Disabled   unlimited
24    Disabled   unlimited
25    Disabled   unlimited
26    Disabled   unlimited
27    Disabled   unlimited
28    Disabled   unlimited
```

port-mode: This command sets IP source guard port mode.

Syntax: **Move** <port-list> enable/disable

Parameter : **<port-list>** available value is from the switch physical port density, format: 1,3-5

disable: Disable IP source guard port mode.

enable: Enable IP source guard port mode.

EXAMPLE:

```
Switch(ip-source-guard)# port-mode 1 enable
Switch(ip-source-guard)# show config

IP Source Guard Mode : Enabled

Port  Port Mode  Dynamic Entry Limit
----  ---------  -------------------
1     Enabled    unlimited
2     Disabled   unlimited
3     Disabled   unlimited
4     Disabled   unlimited
5     Disabled   unlimited
6     Disabled   unlimited
7     Disabled   unlimited
8     Disabled   unlimited
9     Disabled   unlimited
10    Disabled   unlimited
11    Disabled   unlimited
12    Disabled   unlimited
13    Disabled   unlimited
14    Disabled   unlimited
15    Disabled   unlimited
16    Disabled   unlimited
17    Disabled   unlimited
18    Disabled   unlimited
19    Disabled   unlimited
20    Disabled   unlimited
21    Disabled   unlimited
22    Disabled   unlimited
23    Disabled   unlimited
24    Disabled   unlimited
25    Disabled   unlimited
26    Disabled   unlimited
27    Disabled   unlimited
28    Disabled   unlimited
```

show: This command shows IP source guard information.

Syntax: **show** binding-table/ config

Parameter : **binding-table:** Show IP-MAC binding table

config: Show IP source guard configuration

EXAMPLE:

```
Switch(ip-source-guard)# show binding-table
Type     Port  VLAN  IP Address       MAC Address
-------  ----  ----  ---------------  -----------------
Static      1     1  192.168.1.1      5a-80-70-64-60-80
```

translate: This command translates IP source guard dynamic entries into static entries.

Syntax: **translate**

Parameter : **<cr>:** means press the Enter key.

EXAMPLE:

```
Switch(ip-source-guard)# translate
IP Source Guard:
       Translate 0 dynamic entries into static entries.
```

Chapter 23 IPv6 Commands of CLI

IPv6

This section describes how to configure the switch-managed IPv6 information. The Configured column is used to view or change the IPv6 configuration. And the Current column is used to show the active IPv6 configuration.
Configure the switch-managed IPv6 information on this page.
The Configured column is used to view or change the IPv6 configuration.
The Current column is used to show the active IPv6 configuration.

Table 22: IPv6 Commands

Command	Function
autoconfig	Configure IPv6 autoconfig mode
setup	Set the IPv6 address
show	Show IPv6 information

autoconfig:

The command lets you configure IPv6 autoconfig mode.

Syntax: **autoconfig** disable/ enable/ renew

Parameter : **disable:** Disable autoconfig mode

enable: Enable autoconfig mode

renew: Force to renew IPv6 address

EXAMPLE:

```
Switch(ipv6)# autoconfig enable
Switch(ipv6)# show config
Auto Configuration : Enabled
Address            : ::192.168.1.1
Prefix             : 96
Gateway            : ::
```

setup:

The command lets you set the IPv6 address

Syntax: **setup** <ipv6-address> <deny> <permit>.

Parameter : **<ipv6-address>:** IPv6 address is in 128-bit records represented as eight fields of up to four hexadecimal digits with a colon separating each field (:).

For example, 'fe80::215:c5ff:fe03:4dc7'. The symbol '::' is a special syntax that can be used as a shorthand way of representing multiple

16-bit groups of contiguous zeros; but it can only appear once. It is also used following a legal IPv4 address. For example, '::192.1.2.34'

<1-128>: IPv6 prefix

<ipv6-address>: Gateway IPv6 address IPv6 address is in 128-bit records represented as eight fields of up to four hexadecimal digits with a colon separating each field (:).

For example, 'fe80::215:c5ff:fe03:4dc7'. The symbol '::' is a special syntax that can be used as a shorthand way of representing multiple 16-bit groups of contiguous zeros; but it can only appear once. It is also used following a legal IPv4 address. For example, '::192.1.2.34'

EXAMPLE:

```
witch(ipv6)# setup ::192.168.6.1 1 ::192.168.0.0
Switch(ipv6)# show config
Auto Configuration : Enabled
Address            : ::192.168.6.1
Prefix             : 1
Gateway            : ::192.168.0.0
```

show: This command shows IPv6 information on the switch.

Syntax: **show** config/ current

Parameter : **config:** Show IPv6 configuration

current: Show IPv6 current information

EXAMPLE:

```
Switch(ipv6)# show config
Auto Configuration : Disabled
Address            : ::192.168.6.1
Prefix             : 96
Gateway            : ::


Switch(ipv6)# show current

Active Configuration for IPv6: (Static with Stateless)
Link-Local Address : fe80::240:c7ff:fe34:3400
Address            : ::192.168.6.1
Prefix             : 96
Gateway            : ::
```

Chapter 24 LACP Commands of CLI

LACP

Ports using Link Aggregation Control Protocol (according to IEEE 802.3ad specification) as their trunking method can choose their unique LACP GroupID to form a logic “trunked port”. The benefit of using LACP is that a port makes an agreement with its peer port before it becomes a ready member of a “trunk group” (also called aggregator). LACP is safer than the other trunking method—static trunk.

Table 23: LACP Commands

Command	Function
clear	Clear command
key	Configure the LACP key
mode	Configure the LACP mode
role	Configure the LACP role
Show	Show LACP information

clear:

This command lets you clear the link aggregation entry on switch.

Syntax: **clear** statistics

Parameter : **statistics:** Clear LACP statistics.

EXAMPLE:

```
Switch(lacp)# clear statistics
Switch(lacp)# show statistics
Port  Rx Frames   Tx Frames   Rx Unknown  Rx Illegal
----  ----------  ----------  ----------  ----------
1     0           0           0           0
2     0           0           0           0
3     0           0           0           0
4     0           0           0           0
```

key:

This command lets you configure the LACP key.

Syntax: **key** <port-list> <1-65535>/ auto

Parameter : **<port-list>** available value is from the switch physical port density, format: 1,3-5

<1-65535>: LACP key

auto: The Auto setting will set the key as appropriate by the physical

Publication date: Feb., 2012
Revision A1

link speed, 10Mb = 1, 100Mb = 2, 1Gb = 3

EXAMPLE:

```
Switch(lacp)# key 1 10000
Switch(lacp)# show config
Port  Mode      Key    Role
----  --------  -----  ------
1     Disabled  10000  Active
2     Disabled  Auto   Active
3     Disabled  Auto   Active
4     Disabled  Auto   Active
5     Disabled  Auto   Active
```

mode: The command lets you configure the LACP mode.

Syntax: **mode** <port-list> disable/enable

Parameter : **<port-list>** available value is from the switch's physical port density, format: 1,3-5

disable: Disable LACP protocol

enable: Enable LACP protocol

EXAMPLE:

```
Switch(lacp)# mode 1 enable
Switch(lacp)# show config
Port  Mode      Key    Role
----  --------  -----  ------
1     Enabled   Auto   Active
2     Disabled  Auto   Active
3     Disabled  Auto   Active
4     Disabled  Auto   Active
```

role: This command lets you configure the LACP role

Syntax: **role** <port-list> active/ passive

Parameter : **<port-list>** available value is from the switch physical port density, format: 1,3-5

active: Initiate LACP negotiation, and transmit LACP packets each second

passive: Listen for LACP packets

EXAMPLE:

```
Switch(lacp)# role 1 passive
Switch(lacp)# show config
Port  Mode      Key    Role
----  --------  -----  ------
1     Disabled  Auto   Passive
2     Disabled  Auto   Active
3     Disabled  Auto   Active
```

show: This command shows LACP information.

Syntax: **show** config/ statistics/ status

Parameter : **config:** Show LACP configuration

statistics: Show LACP statistics

status: Show LACP status

EXAMPLE:

```
Switch(lacp)# show config
Port  Mode      Key    Role
----  --------  -----  ------
1     Disabled  Auto   Passive
2     Disabled  Auto   Active

Switch(lacp)# show statistics
Port  Rx Frames   Tx Frames   Rx Unknown  Rx Illegal
----  ----------  ----------  ----------  ----------
1     0           0           0           0
2     0           0           0           0
3     0           0           0           0

witch(lacp)# show status

Port  Mode      Key    Aggr ID  Partner System ID  Partner Port
----  --------  -----  -------  -----------------  ------------
1     Disabled  -      -        -                  -
2     Disabled  -      -        -                  -
3     Disabled  -      -        -                  -
```

Chapter 25 LLDP Commands of CLI

LLDP

The switch supports the LLDP. For current information on your switch model, The Link Layer Discovery Protocol (LLDP) provides a standards-based method for enabling switches to advertise themselves to adjacent devices and to learn about adjacent LLDP devices. The Link Layer Discovery Protocol (LLDP) is a vendor-neutral Link Layer protocol in the Internet Protocol Suite used by network devices for advertising their identity, capabilities, and neighbors on a IEEE 802 local area network, principally wired Ethernet. The protocol is formally referred to by the IEEE as Station and Media Access Control Connectivity Discovery specified in standards document IEEE 802.1AB.

Table 24: LLDP Commands

Command	Function
cdp-aware	Configure CDP (Cisco Discovery Protocol) aware mode
clear	Clear LLDP statistics
delay	Configure ARP inspection mode
hold	Configure LLDP Tx hold value
interval	Configure LLDP transmission interval
mode	Configure the LLDP mode
option-tlv	Configure LLDP Optional TLVs
reinit	Configure LLDP reinit delay
show	Show LLDP information

cdp-aware:

This command lets you configure CDP (Cisco Discovery Protocol) aware mode.

Syntax: **add** <port-list> disable/ enable

Parameter : **<port-list>** available value is from the switch physical port density, format: 1,3-5

disable: Disable CDP awareness

enable: Enable CDP awareness (CDP discovery information is added to the LLDP neighbor table)

EXAMPLE:

```
Switch(lldp)# cdp-aware 1 enable
Switch(lldp)# show config
Interval    : 30
Hold        : 4
Tx Delay    : 2
Reinit Delay: 2
             Port        System   System      System      Management CDP
Port Mode     Description Name     Description Capability  Address
awareness
---- -------- ----------- -------- ----------- ----------- ---------- ---------
1    Disabled Enabled     Enabled  Enabled     Enabled     Enabled    Enabled
2    Disabled Enabled     Enabled  Enabled     Enabled     Enabled    Disabled
```

clear: This command lets you clear LLDP statistics.

Syntax: **clear**

Parameter : **<cr>**

EXAMPLE:

```
Switch(lldp)# clear
Switch(lldp)# show statistics
LLDP global counters
Neighbor entries was last changed at 2011-01-01 00:00:00 (5600 sec. ago).
Total Neighbors Entries Added    0.
Total Neighbors Entries Deleted  0.
Total Neighbors Entries Dropped  0.
Total Neighbors Entries Aged Out 0.

LLDP local counters
       Rx       Tx       Rx       Rx       Rx TLV   Rx TLV   Rx TLV
Port   Frames   Frames   Errors   Discards Errors   Unknown  Organz.  Aged
----   ------   ------   ------   -------- ------   -------  -------  -----
1      0        0        0        0        0        0        0        0
2      0        0        0        0        0        0        0        0
3      0        0        0        0        0        0        0        0
```

delay : The command lets you configure LLDP Tx delay.

Syntax: **delay** <1-8192>

Parameter : **<1-8192>:** LLDP transmission delay

EXAMPLE:

```
Switch(lldp)# delay 5
Switch(lldp)# show config
Interval    : 30
Hold        : 4
Tx Delay    : 5
Reinit Delay: 2
             Port        System   System      System      Management CDP
Port Mode     Description Name     Description Capability  Address
awareness
---- -------- ----------- -------- ----------- ----------- ---------- ---------
1    Disabled Enabled     Enabled  Enabled     Enabled     Enabled    Disabled
2    Disabled Enabled     Enabled  Enabled     Enabled     Enabled    Disabled
```

hold:

The command lets you configure LLDP Tx hold value.

Syntax: **hold** <2-10>

Parameter : **<2-10>:** LLDP hold value

EXAMPLE:

```
Switch(lldp)# hold 10
Switch(lldp)# show config
Interval    : 30
Hold        : 10
Tx Delay    : 2
Reinit Delay: 2
             Port        System   System      System      Management CDP
Port Mode     Description Name     Description Capability  Address
awareness
---- -------- ----------- -------- ----------- ----------- ---------- ---------
1    Disabled Enabled     Enabled  Enabled     Enabled     Enabled    Disabled
2    Disabled Enabled     Enabled  Enabled     Enabled     Enabled    Disabled
```

interval:

The command lets you configure LLDP transmission interval.

Syntax: **interval** <5-32768>

Parameter : **<5-32768>:** LLDP transmission interval

EXAMPLE:

```
Switch(lldp)# interval 40
Switch(lldp)# show config
Interval    : 40
Hold        : 4
Tx Delay    : 2
Reinit Delay: 2
             Port        System   System      System      Management CDP
Port Mode     Description Name     Description Capability  Address
awareness
---- -------- ----------- -------- ----------- ----------- ---------- ---------
1    Disabled Enabled     Enabled  Enabled     Enabled     Enabled    Disabled
2    Disabled Enabled     Enabled  Enabled     Enabled     Enabled    Disabled
3    Disabled Enabled     Enabled  Enabled     Enabled     Enabled    Disabled
```

mode: The command lets you configure the LLDP mode.

Syntax: **mode** <port-list> disable/ enable

Parameter : **<port-list>** available value is from switch physic port density, format: 1,3-5

disable: The switch will not send out LLDP information, and will drop LLDP information received from neighbors

enable: The switch will send out LLDP information, and will analyze LLDP information received from neighbors

EXAMPLE:

```
Switch(lldp)# mode 1 enable
Switch(lldp)# show config
Interval    : 30
Hold        : 4
Tx Delay    : 2
Reinit Delay: 2
             Port        System   System      System      Management CDP
Port Mode     Description Name     Description Capability  Address
awareness
---- -------- ----------- -------- ----------- ----------- ---------- ---------
1    Enabled  Enabled     Enabled  Enabled     Enabled     Enabled    Disabled
2    Disabled Enabled     Enabled  Enabled     Enabled     Enabled    Disabled
3    Disabled Enabled     Enabled  Enabled     Enabled     Enabled    Disabled
```

option-tiv: The command lets you configure LLDP Optional TLVs.

Syntax: **option-tlv** <port-list> mgmt-addr/ port-desc/ sys-capa/ sys-desc/ sys-name disable/ enable

Parameter : **<port-list>** available value is from the switch physical port density, format: 1,3-5

mgmt-addr: Management IP address

port-desc: Port description

sys-capa: System capability

sys-desc: System description

sys-name: System name

disable Disable TLV

enable Enable TLV

EXAMPLE:

```
Switch(lldp)# option-tlv 1 mgmt-addr disable
Switch(lldp)# option-tlv 1 port-desc disable
Switch(lldp)# option-tlv 1 sys-capa disable
Switch(lldp)# option-tlv 1 sys-desc disable
Switch(lldp)# option-tlv 1 sys-name disable
Switch(lldp)# show config
Interval    : 30
Hold        : 4
Tx Delay    : 2
Reinit Delay: 2
             Port        System   System      System      Management CDP
Port Mode     Description Name     Description Capability  Address
awareness
---- -------- ----------- -------- ----------- ----------- ---------- ---------
1    Disabled Disabled    Disabled Disabled    Disabled    Disabled   Disabled
2    Disabled Enabled     Enabled  Enabled     Enabled     Enabled    Disabled
3    Disabled Enabled     Enabled  Enabled     Enabled     Enabled    Disabled
```

reinit:

The command lets you configure LLDP reinit delay.

Syntax: **reinit** <1-10>

Parameter : **<1-10>:** LLDP reinit delay

EXAMPLE:

```
Switch(lldp)# reinit 10
Switch(lldp)# show config
Interval    : 30
Hold        : 4
Tx Delay    : 2
Reinit Delay: 10
```

show:

The command show LLDP information.

Syntax: **show** config/ info/ statistics

Parameter : **config:** Show LLDP configuration

info: Show LLDP neighbor device information

statistics: Show LLDP statistics

EXAMPLE:

```
Switch(lldp)# show config
Interval    : 30
Hold        : 4
Tx Delay    : 2
Reinit Delay: 2
             Port        System   System      System      Management CDP
Port Mode     Description Name     Description Capability  Address
awareness
---- -------- ----------- -------- ----------- ----------- ---------- ---------
1    Disabled Enabled     Enabled  Enabled     Enabled     Enabled    Disabled
2    Disabled Enabled     Enabled  Enabled     Enabled     Enabled    Disabled

Switch(lldp)# show info 1
No LLDP entries found

Switch(lldp)# show statistics
LLDP global counters
Neighbor entries was last changed at 2011-01-01 00:00:00 (8222 sec. ago).
Total Neighbors Entries Added    0.
Total Neighbors Entries Deleted  0.
Total Neighbors Entries Dropped  0.
Total Neighbors Entries Aged Out 0.

LLDP local counters
      Rx       Tx       Rx       Rx       Rx TLV   Rx TLV   Rx TLV
Port   Frames   Frames   Errors   Discards Errors   Unknown  Organz.  Aged
----   ------   ------   ------   -------- ------   -------  -------  -----
1      0        0        0        0        0        0        0        0
2      0        0        0        0        0        0        0        0
```

Chapter 26 LLDP Media Commands of CLI

LLDP Media

Media Endpoint Discovery is an enhancement of LLDP, known as LLDP-MED, that provides the following facilities:
Auto-discovery of LAN policies (such as VLAN, Layer 2 Priority and Differentiated services (Diffserv) settings) enabling plug and play networking.
Device location discovery to allow creation of location databases and, in the case of Voice over Internet Protocol (VoIP), Enhanced 911 services.
Extended and automated power management of Power over Ethernet (PoE) end points.
Inventory management, allowing network administrators to track their network devices, and determine their characteristics (manufacturer, software and hardware versions, serial or asset number).
This page allows you to configure the LLDP-MED. This function applies to VoIP devices that support LLDP-MED.

Table 25: LLDP Media Commands

Command	Function
civic	Configure LLDP-MED civic address location
coordinate	Configure LLDP-MED coordinate location
delete	Delete the selected policy
ecs	Configure LLDP-MED Emergency Call Service
fast	Configure LLDP-MED fast start repeat count
policy	Configure LLDP-MED policy
port-policy	Configure LLDP-MED port policy
show	Show LLDP-MED information

civic:

The command lets you configure LLDP-MED civic address location function.

Syntax: **civic** additional-code/… <LINE>

Parameter : **additional-code:** Additional code

additional-info: Additional location info

apartment: Unit (Apartment, suite)

block: Neighbourhood, block

building: Building (structure)

city: City, township, shi (Japan)

comm-name: Postal community name

country-code: The two-letter ISO 3166 country code

county: County, parish, gun (Japan), district

district: City division, borough, city district, ward, chou(Japan)

floor: Floor

house-no: House number

house-no-suffix: House number suffix

landmark: Landmark or vanity address

leading-street-direction: Leading street direction

name: Name (residence and office occupant)

p.o.box: Post office box (P.O. BOX)

place-type: Place type

room-number: Room number

state: National subdivisions (state, canton, region, province, prefecture)

street: Street Room number

National subdivisions (state, canton, region, province, prefecture)

Stree

street-suffix: Street suffix

trailing-street-suffix: Trailing street suffix

zip_code: Postal/zip code

<LINE>: The value for the Civic Address Location entry

EXAMPLE:

```
Switch(lldpmed)# civic city taipei
Switch(lldpmed)# civic floor 1
Switch(lldpmed)# show config

Fast Start Repeat Count   : 4

Location Coordinates
--------------------
Latitude                : 0.0000 North
Longitude               : 0.0000 East
Altitude                : 0.0000 meter(s)
Map datum               : WGS84

Civic Address Location
----------------------
Country code            :
National subdivison      :
County                  :
City                    : taipei
City district           :
Block (Neighborhood)     :
Street                  :
Street Dir              :
Trailling Street         :
Street Suffix           :
House No.               :
House No. Suffix         :
Landmark                :
Additional Location Info  :
Name                    :
Zip                     :
Building                :
Unit                    :
Floor                   : 1
Room No.                :
Placetype               :
Postal Community Name    :
P.O. Box                :
Addination Code          :

Emergency Call Service    :
```

coordinate:

The command lets you configure LLDP-MED coordinate location function.

Syntax:

coordinate altitude <coordinate-value> floor/ meter

coordinate datum nad83-mllw/ nad83-navd88/ wgs84

coordinate latitude <coordinate-value> north/ south

coordinate longitude <coordinate-value> east/ west

Parameter :

altitude: Altitude

<coordinate-value>: -32767 to 32767 Meters or floors with max. 4 digits

floor: Representing altitude in a form more relevant in buildings that have different floor-to-floor dimensions

meter: Representing meters of Altitude defined by the vertical datum specified

datum : Map datum

nad83-mllw	North American Datum 1983, CRS Code 4269, Prime Meridian Name: Greenwich; The associated vertical datum is Mean Lower Low Water (MLLW). This datum pair is to be used when referencing locations on water/sea/ocean
nad83-navd88	North American Datum 1983, CRS Code 4269, Prime Meridian Name: Greenwich; The associated vertical datum is the North American Vertical Datum of 1988 (NAVD88). This datum pair is to be used when referencing locations on land, not near tidal water (which would use Datum = NAD83/MLLW)
wgs84	(Geographical 3D) - World Geodesic System 1984, CRS Code 4327, Prime Meridian Name: Greenwich

latitude: Latitude

<coordinate-value>: 0 to 90 degress with max. 4 digits

north: North of the equator

south: South of the equator

longitude: Longitude

<coordinate-value>: 0 to 180 degress with max. 4 digits

east: East of the prime meridian

west: West of the prime meridian

EXAMPLE:

```
itch(lldpmed)# coordinate altitude 10 floor
Switch(lldpmed)# coordinate datum nad83-mllw
Switch(lldpmed)# coordinate latitude 60 north
Switch(lldpmed)# coordinate longitude 30 east
Switch(lldpmed)# show config

Fast Start Repeat Count   : 4

Location Coordinates
--------------------
Latitude                : 60.0000 North
Longitude               : 30.0000 East
Altitude                : 10.0000 floor
Map datum               : NAD83/MLLW
```

delete: The command lets you delete the selected policy.

Syntax: **delete <0-31>**

Parameter : **<0-31>:** Policy ID, available value is from 0 to 31

EXAMPLE:

```
Switch(lldpmed)# delete 1
Switch(lldpmed)# show policy
Policy Id  Application Type         Tag      Vlan ID  L2 Priority  DSCP
---------  -----------------------  -------  -------  -----------  ----
```

ecs: The command lets you configure LLDP-MED Emergency Call Service.

Syntax: **ecs <number>**

Parameter : **<number>:** The numerical digit string for the Emergency Call Service

EXAMPLE:

```
Switch(lldpmed)# ecs 0921555678
Switch(lldpmed)# show config

Fast Start Repeat Count   : 4

Location Coordinates
--------------------
Latitude                : 60.0000 North
Longitude               : 30.0000 East
Altitude                : 10.0000 floor
Map datum               : NAD83/MLLW


Emergency Call Service    : 0921555678
```

fast: The command lets you configure LLDP-MED fast start repeat count function.

Syntax: **fast** < console>/< ssh >/ < telnet >/ < web >, local / none / radius / tacats+

Parameter : **<1-10>:** The number of times the fast start LLDPDU is being sent during the activation of the fast start mechanism defined by LLDP-MED

EXAMPLE:

```
witch(lldpmed)# fast 10
Switch(lldpmed)# show config

Fast Start Repeat Count   : 10

Location Coordinates
--------------------
Latitude                : 60.0000 North
Longitude               : 30.0000 East
Altitude                : 10.0000 floor
Map datum               : NAD83/MLLW
```

policy:

The command lets you configure LLDP-MED policy.

Syntax: **policy** tagged/ untagged <1-4094> <0-7> <0-63> guest-voice/…

Parameter : **tagged:** The device is using tagged frames

untagged: The device is using untagged frames

<1-4094>: VLAN ID, available value is from 1 to 4094

<0-7>: Layer 2 priority to be used for the specified application type

<0-63>: DSCP value to be used to provide Diffserv node beha viour for the specified application type as defined in IETF RFC 2474

guest-voice	Guest Voice to support a separate limited feature-set voice service for guest users and visitors with their own IP Telephony handsets and other similar appliances supporting interactive voice services
guest-voice-signaling	Guest Voice Signaling (conditional) for use in network topologies that require a different policy for the guest voice signaling than for the guest voice media
softphone-voice	Softphone Voice for use by softphone applications on typical data centric devices, such as PCs or laptops. This class of endpoints frequently does not support multiple VLANs, if at all,and are typically configured to use an untagged VLAN or a single tagged data specific VLAN
streaming-video	Streaming Video for use by broadcast or multicast based video content distribution and other similar applications supporting streaming video services that require specific network policy treatment. Video applications relying on TCP with buffering would not be an intended use of this application type.
video-conferencing	Video Conferencing for use by dedicated Video Conferencing equipment and other similar appliances supporting real-time

	interactive video/audio services.
video-signaling	ideo Signaling (conditional) for use in network topologies that require a separate policy for the video signaling than for the video media
voice	Voice for use by dedicated IP Telephony handsets and other similar appliances supporting interactive voice services. These devices are typically deployed on a separate VLAN for ease of deployment and enhanced security by isolation from data applications
voice-signaling	Voice Signaling (conditional) for use in network topologies that require a different policy for the voice signaling than for the voice media

EXAMPLE:

```
Switch(lldpmed)# policy  tagged  1 0 60 guest-voice
New policy added with policy id: 1
Switch(lldpmed)# show policy
Policy Id  Application Type         Tag       Vlan ID  L2 Priority  DSCP
---------  ----------------------  --------  -------  -----------  ----
0          Guest Voice             Tagged    1        0            60
```

port-policy:

The command lets you configure LLDP-MED port policy function.

Syntax: **port-policy** <port-list> <0-31> disable/enable

Parameter : **<port-list>** available value is from switch physic port density, format: 1,3-5

<0-31>: Policy ID, available value is from 0 to 31

disable: Disable the policy to a given port

enable: Enable the policy to a given port

EXAMPLE:

```
Switch(lldpmed)# port-policy 1 2 enable
Switch(lldpmed)# show port-policy
Port    Policies
----    -------------
1       2
2       none
3       none
4       none
5       none
```

show: The command lets you display LLDP-MED information.

Syntax: **show** config/ info/ policy/ port-policy

Parameter : **config:** Show LLDP-MED configuration

info: Show LLDP-MED neighbor device information

policy: Show LLDP-MED policy configuration

port-policy: Show LLDP-MED port policy configuration

EXAMPLE:

```
witch(lldpmed)# show config

Fast Start Repeat Count   : 10

Location Coordinates
--------------------
Latitude                : 60.0000 North
Longitude               : 30.0000 East
Altitude                : 10.0000 floor
Map datum               : NAD83/MLLW

Civic Address Location
----------------------
Country code             :
National subdivison       :
County                  :
City                    : taipei
City district            :
Block (Neighborhood)      :
Street                  :
Street Dir               :
Trailling Street          :
Street Suffix            :
House No.               :
House No. Suffix          :
Landmark                :
Additional Location Info  :
Name                    :
Zip                     :
Building                 :
Unit                    :
Floor                   : 1
Room No.                 :
Placetype                :
Postal Community Name     :
P.O. Box                :
Addination Code           :

Emergency Call Service    : 0921555678

Switch(lldpmed)# show info 1
No LLDP-MED entries found

Switch(lldpmed)# show policy
Policy Id  Application Type          Tag       Vlan ID  L2 Priority  DSCP
---------  ------------------------  --------  -------  -----------  ----
0          Guest Voice               Tagged    1        0            60

Switch(lldpmed)# show port-policy
Port    Policies
----    -------------
1       2
2       none
3       none
```

Chapter 27 Loop protection Commands of CLI

Loop protection

The loop detection is used to detect the presence of traffic. When the switch receives a packet's (looping detection frame) MAC address that's the same as the one from a port, show Loop Protection happens. The port will be locked when it receives the looping detection frames.

Table 26: Loop protection Commands

Command	Function
interval	Configure loop protection transmit interval
mode	Configure loop protection mode
port-action	Configure loop protection port action
port-mode	Configure loop protection port mode
port-transmit	Configure loop protection port transmit mode
show	Display loop protection information
shutdown	Configure loop protection shutdown time

interval:

The command lets you configure loop protection transmit interval.

Syntax: **interval** <1-10>

Parameter : **<1-10>** Transmit time interval

EXAMPLE:

```
Switch(loop-protect)# interval 3
Switch(loop-protect)# show config
Loop Protection   : Disabled
Transmission Time : 3
Shutdown Time     : 180
```

mode:

The command lets you configure loop protection mode.

Syntax: **mode** disable/ enable

Parameter : **disable:** Disable loop protection operation

enable: Enable loop protection operation

EXAMPLE:

```
Switch(loop-protect)# mode enable
Switch(loop-protect)# show config
Loop Protection   : Enabled
Transmission Time : 3
Shutdown Time     : 180

Port  Mode      Action           Transmit
----  --------  ---------------  --------
1     Enabled   Shutdown         Enabled
2     Enabled   Shutdown         Enabled
3     Enabled   Shutdown         Enabled
4     Enabled   Shutdown         Enabled
```

port-action: The command lets you configure loop protection port action.

Syntax: **port-action** <port-list> both/ log/ shutdown

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5

both: Shutdown the port and log event

log: Log the event only

shutdown: Shutdown the port

EXAMPLE:

```
Switch(loop-protect)# port-action 1 both
Switch(loop-protect)# show config
Loop Protection   : Disabled
Transmission Time : 3
Shutdown Time     : 180

Port  Mode      Action           Transmit
----  --------  ---------------  --------
1     Enabled   Shutdown and Log  Enabled
2     Enabled   Shutdown         Enabled

Switch(loop-protect)# port-action 1 log
Switch(loop-protect)# show config
Loop Protection   : Disabled
Transmission Time : 3
Shutdown Time     : 180

Port  Mode      Action           Transmit
----  --------  ---------------  --------
1     Enabled   Log Only         Enabled
2     Enabled   Shutdown         Enabled

Switch(loop-protect)# port-action 1 shutdown
Switch(loop-protect)# show config
Loop Protection   : Disabled
Transmission Time : 3
Shutdown Time     : 180

Port  Mode      Action           Transmit
----  --------  ---------------  --------
1     Enabled   Shutdown         Enabled
2     Enabled   Shutdown         Enabled
```

port-mode: The command lets you configure loop protection port mode.

Syntax: **port-mode** <port-list> disable/ enable

Parameter : **<port-list>** available value is from switch physical port density, format: 1,3-5

disable: Disable loop protection operation

enable: Enable loop protection operation

EXAMPLE:

```
Switch(loop-protect)# port-mode 1 disable
Switch(loop-protect)# show config
Loop Protection   : Disabled
Transmission Time : 3
Shutdown Time     : 180

Port  Mode      Action           Transmit
----  --------  ---------------  --------
1     Disabled  Shutdown         Enabled
2     Enabled   Shutdown         Enabled
3     Enabled   Shutdown         Enabled
```

port-transmit: The command lets you configure loop protection port transmit mode.

Syntax: **reinit** <1-10>

Parameter : **<port-list>** available value is from switch physical port density, format: 1,3-5

disable: Passively looking for looped PDUs

enable: Actively generating loop protection PDU's

EXAMPLE:

```
Switch(loop-protect)# port-transmit 1 disable
Switch(loop-protect)# show config
Loop Protection   : Disabled
Transmission Time : 3
Shutdown Time     : 180

Port  Mode      Action           Transmit
----  --------  ---------------  --------
1     Disabled  Shutdown         Disabled
2     Enabled   Shutdown         Enabled
```

show: The command display loop protection information.

Syntax: **show** config/ status

Parameter : **config:** Show loop protection configuration

status: Show loop protection status

EXAMPLE:

```
Switch(loop-protect)# show config
Loop Protection   : Disabled
Transmission Time : 5
Shutdown Time     : 180

Port  Mode      Action           Transmit
----  --------  ---------------  --------
1     Enabled   Shutdown         Enabled
2     Enabled   Shutdown         Enabled
3     Enabled   Shutdown         Enabled
4     Enabled   Shutdown         Enabled

Switch(loop-protect)# show status
Port  Action           Transmit  Loops     Status    Loop  Time of Last Loop
----  ---------------  --------  --------  --------  ----
------------------
1     Shutdown         Enabled         0  Down      -     -
2     Shutdown         Enabled         0  Down      -     -
3     Shutdown         Enabled         0  Down      -     -
4     Shutdown         Enabled         0  Down      -     -
```

shutdown:

The command lets you configure loop protection shutdown time.

Syntax: **shutdown** <0-604800>

Parameter : **<0-604800>:** Shutdown time interval. A value of zero disables re-enabling the port

EXAMPLE:

```
Switch(loop-protect)# shutdown 200
Switch(loop-protect)# show config
Loop Protection   : Disabled
Transmission Time : 3
Shutdown Time     : 200
```

Chapter 28 Port Mirroring Commands of CLI

Mirroring

You can mirror traffic from any source port to a target port for real-time analysis. You can then attach a logic analyzer or RMON probe to the target port and study the traffic crossing the source port in a completely unobtrusive manner.
Mirror Configuration is used to monitor the traffic of the network. For example, we assume that Port A and Port B are Monitoring Port and Monitored Port respectively, thus, the traffic received by Port B will be copied to Port A for monitoring.

Table 27: Port Mirroring Commands

Command	Function
analyzer-port	Configure analyzer port
port-mode	Configure port mode
show	Show port mirroring information

analyzer-port:

The command lets you configure an analyzer port on the switch.

Syntax: **analyzer-port** disable/ <port>

Parameter : **disable:** Disable port mirroring

<port>: Analyzer port, available value is from 1 to switch physical port density

EXAMPLE:

```
Switch(mirror)# analyzer-port 1
Switch(mirror)# show

Analyzer Port: 1

Port  Mode
----  --------
1     Disabled
2     Disabled
```

port-mode:

The command lets you configure port mode on the switch.

Syntax: **port-mode** <port-list> disable/ enable/ rx-only/ tx-only

Parameter : **<port-list>** available value is from switch physical port density, format: 1,3-5

Publication date: Feb., 2012
Revision A1

disable: The parameter disables DHCP relay mode.

Enable: The parameter enables DHCP snooping mode.

rx-only: Enable Rx mirroring

tx-only: Enable Tx mirroring

EXAMPLE:

```
Switch(mirror)# port-mode 2 enable
Switch(mirror)# port-mode 3 rx-only
Switch(mirror)# port-mode 4 tx-only
Switch(mirror)# port-mode 1 disable
Switch(mirror)# show

Analyzer Port: 1

Port  Mode
----  --------
1     Disabled
2     Enabled
3     Rx-only
4     Tx-only
```

show: The command lets you show port mirroring information.

Syntax: **show**

Parameter : <cr>

EXAMPLE:

```
Switch(mirror)# show

Analyzer Port: Disabled

Port  Mode
----  --------
1     Disabled
2     Disabled
3     Disabled
4     Disabled
```

Chapter 29 MLD Commands of CLI

MLD

Curiously enough, a network node that acts as a source of IPv6 multicast traffic is only an indirect participant in MLD snooping—it just provides multicast traffic, and MLD doesn't interact with it. (Note, however, that in an application like desktop conferencing, a network node may act as both a source and an MLD host, but MLD interacts with that node only in its role as an MLD host.)

A source node creates multicast traffic by sending packets to a multicast address. In IPv6, addresses with the first eight bits set (that is, "FF" as the first two characters of the address) are multicast addresses, and any node that listens to such an address will receive the traffic sent to that address. Application software running on the source and destination systems cooperates to determine what multicast address to use. (Note that this is a function of the application software, not of MLD.)

When MLD snooping is enabled on a VLAN, the switch acts to minimize unnecessary multicast traffic. If the switch receives multicast traffic destined for a given multicast address, it forwards that traffic only to ports on the VLAN that have MLD hosts for that address. It drops that traffic for ports on the VLAN that have no MLD hosts.

Table 28: MLD Commands

Command	Function
compatibility	Set the Versions of MLD Operating on Hosts and Routers
delete	Delete commands
fast-leave	Set per-port Fast Leave
filtering	The IP Multicast Group that will be filtered
flooding	Set MLD Flooding Mode
lmqi	Set the per-VLAN Last Member Query Interval
proxy	Set MLD Proxy Mode
qi	Set the per-VLAN Query Interval
qri	Set the per-VLAN Query Response Interval
querier	Enable/Disable the per-VLAN MLD Querier
router	Set Router Port
rv	Set the per-VLAN Robustness Variable
show	Show MLD Information
snooping	Set MLD Snooping Mode
ssm-range	Set MLD SSM Range

state	Enable/Disable the per-VLAN MLD Snooping
throttling	Set per-port Throttling
uri	Set the per-VLAN Unsolicited Report Interval

compatibility:

The command lets you set the Versions of MLD Operating on Hosts and Routers.

Syntax: **compatibility** < vlan-list > Forced-MLDv1/ Forced-MLDv2/ MLD-Auto

Parameter : **<vlan-list>:** VLAN list, available value is from 1 to 4094 format: 1,3-5

Forced-MLDv1: Set MLDv1 of MLD operating on hosts and routers

Forced-MLDv2: Set MLDv2 of MLD operating on hosts and routers

MLD-Auto: Set auto mode of MLD operating on hosts and routers

EXAMPLE:

```
Switch(mld)# compatibility 1 forced-MLDv1
```

delete:

The command lets you delete commands

Syntax: **delete** <port-list> <ipv6-address>

Parameter : **<port-list>** available value is from switch physical port density, format: 1,3-5

<ipv6-address>: Delete MLD filtering group.

EXAMPLE:

```
Switch(mld)# delete 1 fe80::202:b3ff:fe1e:8329
Switch(mld)# show config
MLD Snooping : Disabled
MLd Flooding Control : Enabled
MLd Proxy : Disabled
```

fast-leave:

The command lets you set per-port Fast Leave

Syntax: **fast-leave** <port-list> disable/ enable

Parameter : **<port-list>** available value is from switch physical port density, format: 1,3-5

disable: Disable fast leave

enable: Enable fast leave

EXAMPLE:

```
Switch(mld)# fast-leave 1 enable
Switch(mld)# show config
MLD Snooping : Disabled
MLd Flooding Control : Enabled
MLd Proxy : Disabled

MLD SSM Range: ff3e::/96
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  ----------------------
1     Disabled  No              Enabled     Unlimited
2     Disabled  No              Disabled    Unlimited
3     Disabled  No              Disabled    Unlimited
4     Disabled  No              Disabled    Unlimited
```

filtering:

The command lets you to set the IP Multicast Group that will be filtered.

Syntax: **filtering** <port-list> <ipv6-address>

Parameter : **<port-list>** available value is from switch physical port density, format: 1,3-5

<ipv6-address>: IPv6 address is in 128-bit records represented as eight fields of up to four hexadecimal digits with a colon separating each field (:). For example, 'fe80::215:c5ff:fe03:4dc7'. The symbol '::' is a special syntax that can be used as a shorthand way of representing multiple 16-bit groups of contiguous zeros; but it can only appear once. It also used following a legal IPv4 address. For example, '::192.1.2.34'

EXAMPLE:

```
Switch(mld)# filtering 1 fe80::215:c5ff:fe03:4dc7
Switch(mld)# show config
MLD Snooping : Disabled
MLd Flooding Control : Enabled
MLd Proxy : Disabled

MLD SSM Range: ff3e::/96
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  ----------------------
1     Disabled  No              Enabled     Unlimited
2     Disabled  No              Disabled    Unlimited
3     Disabled  No              Disabled    Unlimited
4     Disabled  No              Disabled    Unlimited

VID   State     Querier   Compatibility  RV   QI     QRI    LLQI   URI
----  --------  --------  -------------  ---  -----  -----  -----  -----
1     Disabled  Enabled

Port  Filtering Groups
----  ------------------------------------
1     6665:3830:3a3a:3231:353a:6335:6666:3a66
2     No Filtering Group
3     No Filtering Group
```

flooding:

The command lets you set MLD Flooding Mode.

Syntax: **flooding** disable/ enable

Parameter : **disable:** Disable unregistered IPMCv6 traffic flooding.

Enable: Enable unregistered IPMCv6 traffic flooding.

EXAMPLE:

```
Switch(mld)# flooding disable
Switch(mld)# show config
MLD Snooping : Disabled
MLd Flooding Control : Disabled
MLd Proxy : Disabled
```

lmqi: The command lets you set the per-VLAN Last Member Query Interval

Syntax: **lmqi** <vlan-list> <0-31744>

Parameter : **<vlan-list>:** VLAN list, available value is from 1 to 4094 format: 1,3-5.

<0-31744>: Range:0~31744 tenths of sec, default:100 tenths of sec.

EXAMPLE:

```
Switch(mld)# lmqi 1 31744
```

proxy: The command lets you set MLD Proxy Mode

Syntax: **proxy** disable/ enable

Parameter : **disable:** Disable MLD proxy.

Enable: Enable MLD proxy.

EXAMPLE:

```
Switch(mld)# proxy enable
Switch(mld)# show config
MLD Snooping : Disabled
MLd Flooding Control : Disabled
MLd Proxy : Enabled
```

qi: The command lets you set the per-VLAN Query Interval

Syntax: **qi** <vlan-list> <1-255>

Parameter : **<vlan-list>:** VLAN list, available value is from 1 to 4094 format: 1,3-5.

<1-255>: Range:1–255 sec, default:125 sec

EXAMPLE:

```
Switch(mld)# state 1 enable
Switch(mld)# qi 1 888
Switch(mld)# show config
MLD Snooping : Disabled
MLd Flooding Control : Enabled
MLd Proxy : Disabled

MLD SSM Range: ff3e::/96
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  ----------------------
1     Disabled  No              Disabled    Unlimited
2     Disabled  No              Disabled    Unlimited

VID   State     Querier   Compatibility  RV   QI     QRI    LLQI   URI
----  --------  --------  -------------  ---  -----  -----  -----  -----
1     Enabled   En
```

qri:

The command lets you set the per-VLAN Query Response Interval

Syntax: **qri** <vlan-list> <0-31744>

Parameter : **<vlan-list>:** VLAN list, available value is from 1 to 4094 format: 1,3-5.

<0-31744>: Range:0–31744 tenths of sec, default:100 tenths of sec.

EXAMPLE:

```
Switch(mld)# state 1 enable
Switch(mld)# qri 1 555
Switch(mld)# show config
MLD Snooping : Disabled
MLd Flooding Control : Enabled
MLd Proxy : Disabled

MLD SSM Range: ff3e::/96
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  ----------------------
1     Disabled  No              Disabled    Unlimited
2     Disabled  No              Disabled    Unlimited

VID   State     Querier   Compatibility  RV   QI     QRI    LLQI   URI
----  --------  --------  -------------  ---  -----  -----  -----  -----
1     Enabled   Enabled   IGMP-Auto      2    888    555    10     1
```

querier:

The command lets you Enable/Disable the per-VLAN MLD Querier

Syntax: **querier** <vlan-list> disable/ enable

Parameter : **<vlan-list>:** VLAN list, available value is from 1 to 4094 format: 1,3-5.

disable: Disable the per-VLAN MLD querie.

Enable: Enable the per-VLAN MLD querier.

EXAMPLE:

```
Switch(mld)# querier 1 enable
Switch(mld)# show config
MLD Snooping : Disabled
MLd Flooding Control : Enabled
MLd Proxy : Disabled

MLD SSM Range: ff3e::/96
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  ----------------------
1     Disabled  No              Disabled    Unlimited
2     Disabled  No              Disabled    Unlimited


VID   State     Querier   Compatibility  RV   QI     QRI    LLQI   URI
----  --------  --------  -------------  ---  -----  -----  -----  -----
1     Enabled   Enabled   IGMP-Auto      99   888    555    10     1
```

router: The command lets you set Router Port

Syntax: **router** <port-list> disable/ enable

Parameter : **<port-list>** available value is from switch physical port density, format: 1,3-5.

disable: Disable router port

Enable: Enable router port.

EXAMPLE:

```
Switch(mld)# router 1 enable
Switch(mld)# show config
MLD Snooping : Enabled
MLd Flooding Control : Disabled
MLd Proxy : Enabled

MLD SSM Range: ff3e::/96
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  ----------------------
1     Enabled   No              Disabled    Unlimited
2     Disabled  No              Disabled    Unlimited
3     Disabled  No              Disabled    Unlimited
4     Disabled  No              Disabled    Unlimited
```

rv: The command lets you set the per-VLAN Robustness Variable

Syntax: **rv** <vlan-list> <2-255>

Parameter : **<vlan-list>:** VLAN list, available value is from 1 to 4094 format: 1,3-5.

<2-255>: Range:2–255, default:2.

EXAMPLE:

```
Switch(mld)# rv 1 99
Switch(mld)# show config
MLD Snooping : Disabled
MLd Flooding Control : Enabled
MLd Proxy : Disabled

MLD SSM Range: ff3e::/96
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  ----------------------
1     Disabled  No              Disabled    Unlimited
2     Disabled  No              Disabled    Unlimited


VID   State     Querier   Compatibility  RV   QI     QRI    LLQI   URI
----  --------  --------  -------------  ---  -----  -----  -----  -----
1     Enabled   Enabled   IGMP-Auto      99   888    555    10     1
```

show: The command lets you show MLD Information

Syntax: **show** config

show groups/ ssm/ status/ version <1-4094>

Parameter : **config:** Show MLD Configuration

groups: Entries in the MLD Group table

ssm: Entries in the MLDv2 information table

status: Show MLD status

version: Show MLD working querier/host version currently

<1-4094>: VLAN ID, available value is from 1 to 4094

EXAMPLE:

```
Switch(mld)# show config
MLD Snooping : Disabled
MLd Flooding Control : Enabled
MLd Proxy : Disabled

MLD SSM Range: ff3e::/96
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  ----------------------
1     Disabled  No              Disabled    Unlimited
2     Disabled  No              Disabled    Unlimited
3     Disabled  No              Disabled    Unlimited
4     Disabled  No              Disabled    Unlimited

VID   State     Querier   Compatibility  RV   QI     QRI    LLQI   URI
----  --------  --------  -------------  ---  -----  -----  -----  -----
1     Disabled  Enabled

Port  Filtering Groups
----  --------------------------------------
1     No Filtering Group
2     No Filtering Group
3     No Filtering Group
4     No Filtering Group
```

snooping:

The command lets you set MLD Snooping Mode

Syntax: **snooping** disable/ enable

Parameter : **disable:** Disable the global MLD snooping

Enable: Enable the global MLD snooping

EXAMPLE:

```
Switch(mld)# snoop enable
Switch(mld)# show config
MLD Snooping : Enabled
MLd Flooding Control : Disabled
MLd Proxy : Enabled
```

ssm-range:

The command lets you set MLD SSM Range

Syntax: **ssm-range** <ipv6-address> <8-128>

Parameter : **<ipv6-address>:** Set MLD SSM range address.

<8-128>: Set MLD SSM range value.

EXAMPLE:

```
ssm-range ::ffff:192.168.1.6 10
```

state:

The command lets you Enable/Disable the per-VLAN MLD Snooping

Syntax: **relay-option** disable/ enable

Parameter : **<vlan-list>:** VLAN list, available value is from 1 to 4094 format: 1,3-5.

disable: Disable the per-VLAN MLD snooping

Enable: Enable the per-VLAN MLD snooping

EXAMPLE:

```
Switch(mld)# state 1 enable
Switch(mld)# show config
MLD Snooping : Disabled
MLd Flooding Control : Enabled
MLd Proxy : Disabled

MLD SSM Range: ff3e::/96
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  ----------------------
1     Disabled  No              Disabled    Unlimited
2     Disabled  No              Disabled    Unlimited


VID   State     Querier   Compatibility  RV   QI     QRI    LLQI   URI
----  --------  --------  -------------  ---  -----  -----  -----  -----
1     Enabled   Enabled   IGMP-Auto      99   888    555    10     1
```

throtting:

The command lets you set per-port Throttling

Syntax: **throtting** <port-list> <0-10>

Parameter : **<port-list>** available value is from switch physic port density, format: 1,3-5.

<0-10>: Set port group limit number, range:0–10, 0:unlimited

EXAMPLE:

```
witch(mld)# throttling 1 10
Switch(mld)# show config
MLD Snooping : Enabled
MLd Flooding Control : Disabled
MLd Proxy : Enabled

MLD SSM Range: ff3e::/96
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  ----------------------
1     Disabled  No              Disabled    10
2     Disabled  No              Disabled    Unlimited
3     Disabled  No              Disabled    Unlimited
4     Disabled  No              Disabled    Unlimited
```

uri:

The command lets you set the per-VLAN Unsolicited Report Interval

Syntax: **uri** <vlan-list> <0-31744>

Parameter : **<vlan-list>:** VLAN list, available value is from 1 to 4094 format: 1,3-5.

<0-31744>: Range:0~31744 sec, default:1 sec

EXAMPLE:

```
Switch(mld)# uri 1 777
Switch(mld)# show config
MLD Snooping : Disabled
MLd Flooding Control : Enabled
MLd Proxy : Disabled

MLD SSM Range: ff3e::/96
Port  Router    Dynamic Router  Fast Leave  Group Throttling Number
----  --------  --------------  ----------  ----------------------
1     Disabled  No              Disabled    Unlimited
2     Disabled  No              Disabled    Unlimited


VID   State     Querier   Compatibility  RV   QI     QRI    LLQI   URI
----  --------  --------  -------------  ---  -----  -----  -----  -----
1     Enabled   Enabled   IGMP-Auto      99   888    555    10     777
```

Chapter 30 MVR Commands of CLI

MVR

The MVR feature enables multicast traffic forwarding on the Multicast VLAN. In a multicast television application, a PC or a television with a set-top box can receive the multicast stream. Multiple set-top boxes or PCs can be connected to one subscriber port, which is a switch port configured as an MVR receiver port. When a subscriber selects a channel, the set-top box or PC sends an IGMP join message to Switch A to join the appropriate multicast. Uplink ports that send and receive multicast data to and from the multicast VLAN are called MVR source ports.

Table 29: MVR Commands

Command	Function
immediate-leave	Configure MVR port state about immediate leave
mode	Configure MVR mode
port-mode	Configure MVR port mode
port-type	Configure MVR port type
show	Show command

immediate-leave:

The command lets you configure MVR port state about immediate leave

Syntax: **immediate-leave** <port-list> disable/ enable

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5
disable: Disable immediate leave on the specific port
enable: Enable immediate leave on the specific port

EXAMPLE:

```
Switch(mvr)# immediate-leave 1 enable
Switch(mvr)# show config
MVR Mode         : Disabled
Muticast VLAN ID : 100

Port  Port Mode  Port Type  Immediate Leave
----  ---------  ---------  ------------------
1     Disabled   Receive    Enabled
2     Disabled   Receive    Disabled
3     Disabled   Receive    Disabled
4     Disabled   Receive    Disabled
```

mode: The command lets you configure MVR mode

Syntax: **mode** disable/ enable <1-4094>

Parameter : **disable:** Disable MVR

enable: Enable multicast traffic forwarding on the Multicast VLAN

<1-4094>: Multicast VLAN ID, available is from 1 to 4094

EXAMPLE:

```
Switch(mvr)# mode enable 1
Switch(mvr)# show config
MVR Mode         : Enabled
Muticast VLAN ID : 1
```

port-mode: The command lets you configure MVR port mode

Syntax: **port-mode** <port-list> disable/ enable

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5

disable: Disable MVR on the specific port

enable: Enable MVR on the specific port

EXAMPLE:

```
Switch(mvr)# port-mode 1 enable
Switch(mvr)# show config
MVR Mode         : Disabled
Muticast VLAN ID : 1

Port  Port Mode  Port Type  Immediate Leave
----  ---------  ---------  -----------------
1     Enabled    Receive    Enabled
2     Disabled   Receive    Disabled
3     Disabled   Receive    Disabled
4     Disabled   Receive    Disabled
```

port-type: The command lets you configure MVR port type

Syntax: **port-type** <port-list> receiver/ source

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5

receiver: Define the port as receiver port

source: Define the port as source port

EXAMPLE:

```
witch(mvr)# port-type 2 source
Switch(mvr)# show config
MVR Mode         : Disabled
Muticast VLAN ID : 1

Port  Port Mode  Port Type  Immediate Leave
----  ---------  ---------  -----------------
1     Enabled    Receive    Enabled
2     Disabled   Source     Disabled
3     Disabled   Receive    Disabled
4     Disabled   Receive    Disabled
```

show: The command lets you show command

Syntax: **show** config/ group/ statistics

Parameter : **config:** Show MVR configuration

group: Show MVR group information

statistics: Show MVR statistics information

EXAMPLE:

```
Switch(mvr)# show config
MVR Mode         : Disabled
Muticast VLAN ID : 100

Port  Port Mode  Port Type  Immediate Leave
----  ---------  ---------  -----------------
1     Disabled   Receive    Disabled
2     Disabled   Receive    Disabled
3     Disabled   Receive    Disabled
4     Disabled   Receive    Disabled

Switch(mvr)# show group

Switch(mvr)# show statistics
```

Chapter 31 NAS Commands of CLI

NAS

The section describes how to configure the switch's Network Access Server parameters. Use the NAS server to connect users to a variety of resources, including Internet access, conference calls, printing documents on shared printers, or by simply logging on to the Internet.

Table 30: NAS Commands

Command	Function
agetime	Configure the time in seconds between check for activity on successfully authenticated MAC addresses
clear	Clear NAS statistics
eapol-timeout	Configure the time between EAPOL retransmissions
guest-vlan	Configure the Guest VLAN mode
hold-time	Configure the time in seconds before a MAC-address that failed authentication gets a new authentication chance
mode	Configure the NAS mode
port-guest-vlan	Configure the Guest VLAN mode of switch ports
port-radius-qos	Configure the RADIUS-assigned QoS mode of switch ports
port-radius-vlan	Configure the RADIUS-assigned VLAN mode of switch ports
port-state	Configure the NAS port state
radius-qos	Configure the RADIUS-assigned QoS mode
radius-vlan	Configure the RADIUS-assigned VLAN mode
reauth-period	Configure the period between reauthentications
reauthentication	Configure the NAS reauthentication mode
restart	Restart NAS authentication process
show	Show NAS information

agetime:

The command lets you configure the time in seconds between checks for activity on successfully authenticated MAC addresses.

Syntax: **agetime** <10-1000000>

Parameter : **<10-1000000>:** Time in seconds between checks for activity on a MAC address that succeeded authentication.

EXAMPLE:

```
Switch(nas)# agetime 9999
Switch(nas)# show config
Mode                                : Disabled
Reauthentication                    : Disabled
Reauthentication Period             : 3600
EAPOL Timeout                       : 30
Age Period                          : 9999
Hold Time                           : 10
RADIUS QoS                          : Disabled
RADIUS VLAN                         : Disabled
Guest VLAN                          : Disabled
Guest VLAN ID                       : 1
Maximum Reauthentication Count      : 2
Allow Guest VLAN if EAPOL Frame Seen : Disabled
```

clear:

The command lets you clear NAS statistics

Syntax: **clear** <port-list>

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5

EXAMPLE:

```
Switch(nas)# clear 1
```

eapol-timeout:

The command lets you configure the time between EAPOL retransmissions

Syntax: **eapol-timeout** <1-65535>

Parameter : **<1-65535>:** Time in seconds between EAPOL retransmissions

EXAMPLE:

```
Switch(nas)# eapol-timeout 8888
Switch(nas)# show config
Mode                                : Disabled
Reauthentication                    : Disabled
Reauthentication Period             : 3600
EAPOL Timeout                       : 8888
Age Period                          : 9999
Hold Time                           : 10
RADIUS QoS                          : Disabled
RADIUS VLAN                         : Disabled
Guest VLAN                          : Disabled
Guest VLAN ID                       : 1
Maximum Reauthentication Count      : 2
Allow Guest VLAN if EAPOL Frame Seen : Disabled
```

guest-vlan: The command lets you configure the Guest VLAN mode

Syntax: **guest-vlan** disable

enable <1-4094> <1-255> allow_if_eapol_seen disable/ enable

Parameter : **disable:** Disable Guest VLAN

Enable: Enable Guest VLAN

<1-4094>: Guest VLAN ID used when entering the Guest VLAN

<1-255>: The number of times a Request Identity EAPOL frame is sent without reasponse before considering entering the Guest VLAN

allow_if_eapol_seen: The switch remembers if an EAPOL frame has been received on the port for the life-time of the port. Once the switch considers whether to enter the Guest VLAN, it will first check if this option is enabled or disabled

disable: The Guest VLAN can only be entered if no EAPOL frames have been received on a port for the lifetime of the port

enable: The Guest VLAN can be entered even if an EAPOL frame has been received during the lifetime of the port

EXAMPLE:

```
Switch(nas)# guest-vlan enable 90 150 allow_if_eapol_seen enable
Switch(nas)# show config
Mode                                : Disabled
Reauthentication                     : Disabled
Reauthentication Period              : 3600
EAPOL Timeout                       : 8888
Age Period                          : 9999
Hold Time                           : 10
RADIUS QoS                          : Disabled
RADIUS VLAN                         : Disabled
Guest VLAN                          : Enabled
Guest VLAN ID                       : 90
Maximum Reauthentication Count       : 150
Allow Guest VLAN if EAPOL Frame Seen : Enabled
```

hold-time: The command lets you configure the time in seconds before a MAC-address that failed authentication gets a new authentication chance

Syntax: **old-time** <10-1000000>

Parameter : **<10-1000000>:** Hold time before MAC addresses that failed authentication expire

EXAMPLE:

```
Switch(nas)# hold-time 7777
Switch(nas)# show config
Mode                                : Disabled
Reauthentication                     : Disabled
Reauthentication Period              : 3600
EAPOL Timeout                       : 8888
Age Period                          : 9999
Hold Time                           : 7777
RADIUS QoS                          : Disabled
RADIUS VLAN                         : Disabled
Guest VLAN                          : Enabled
Guest VLAN ID                       : 90
Maximum Reauthentication Count       : 150
Allow Guest VLAN if EAPOL Frame Seen : Enabled
```

mode:

The command lets you configure the NAS mode

Syntax: **mode** disable/ enable

Parameter : **disable:** Globally disable NAS operation mode

Enable: Globally enable NAS operation mode

EXAMPLE:

```
Switch(nas)# mode enable
Switch(nas)# show config
Mode                                : Enabled
Reauthentication                     : Disabled
Reauthentication Period              : 3600
EAPOL Timeout                       : 8888
Age Period                          : 9999
Hold Time                           : 7777
RADIUS QoS                          : Disabled
RADIUS VLAN                         : Disabled
Guest VLAN                          : Enabled
Guest VLAN ID                       : 90
Maximum Reauthentication Count       : 150
Allow Guest VLAN if EAPOL Frame Seen : Enabled
```

port-guest-vlan:

The command lets you configure the Guest VLAN mode of switch ports

Syntax: **port-guest-vlan** <port-list> disable/ enable

Parameter : **<port-list>:** available value is from switch physic port density, format: 1,3-5
disable: Disable Guest VLAN

Enable: Enable Guest VLAN

EXAMPLE:

```
Switch(nas)# port-guest-vlan 1 enable
Switch(nas)# show port-config
Port  Admin State         RADIUS-Assigned QoS  RADIUS-Assigned VLAN  Guest VLAN
----  ------------------  -------------------  --------------------
----------
1     Force Authorized    Disabled             Disabled              Enabled
2     Force Authorized    Disabled             Disabled              Disabled
3     Force Authorized    Disabled             Disabled              Disabled
4     Force Authorized    Disabled             Disabled              Disabled
```

port-radius-qos:

The command lets you configure the RADIUS-assigned QoS mode of switch ports

Syntax: **port-radius-qos** <port-list> disable/ enable

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5
disable: Disable RADIUS-assigned QoS

Enable: Enable RADIUS-assigned QoS

EXAMPLE:

```
Switch(nas)# port-radius-qos 2 enable
Switch(nas)# show port-config
Port  Admin State         RADIUS-Assigned QoS  RADIUS-Assigned VLAN  Guest VLAN
----  ------------------  -------------------  --------------------
----------
1     Force Authorized    Disabled             Disabled              Enabled
2     Force Authorized    Enabled              Disabled              Disabled
3     Force Authorized    Disabled             Disabled              Disabled
4     Force Authorized    Disabled             Disabled              Disabled
```

port-radius-vlan:

The command lets you configure the RADIUS-assigned VLAN mode of switch ports

Syntax: **port-radius-vlan** <port-list> disable/ enable

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5
disable: Disable RADIUS-assigned VLAN

Enable: Enable RADIUS-assigned VLAN

EXAMPLE:

```
Switch(nas)# port-radius-vlan 3 enable
Switch(nas)# show port-config
Port  Admin State         RADIUS-Assigned QoS  RADIUS-Assigned VLAN  Guest VLAN
----  ------------------  -------------------  --------------------
----------
1     Force Authorized    Disabled             Disabled              Enabled
2     Force Authorized    Enabled              Disabled              Disabled
3     Force Authorized    Disabled             Enabled               Disabled
4     Force Authorized    Disabled             Disabled              Disabled
```

port-state: The command lets you configure the NAS port state

Syntax: **port-state** <port-list> force-auth/ force-unauth/ mac-based/ multi/ port-based/ single

Parameter : **<port-list>:** available value is from switch physic port density, format: 1,3-5

force-auth: Port access is allowed

force-unauth: Port access is not allowed

mac-based: Switch authenticates on behalf of the client

multi: Multiple Host NAS Authentication

port-based: Port-based NAS Authentication

single: Single Host NAS Authentication

EXAMPLE:

```
Switch(nas)# port-state 4 force-unauth
Switch(nas)# port-state 5 mac-based
Switch(nas)# port-state 6 multi
Switch(nas)# port-state 7 port-based
Switch(nas)# port-state 8 single
Switch(nas)# show port-config
Port  Admin State         RADIUS-Assigned QoS  RADIUS-Assigned VLAN  Guest VLAN
----  ------------------  -------------------  --------------------
----------
1     Force Authorized    Disabled             Disabled              Disabled
2     Force Authorized    Disabled             Disabled              Disabled
3     Force Authorized    Disabled             Disabled              Disabled
4     Force Unauthorized  Disabled             Disabled              Disabled
5     MAC-Based Auth      Disabled             Disabled              Disabled
6     Multi 802.1X        Disabled             Disabled              Disabled
7     Port-based 802.1X   Disabled             Disabled              Disabled
8     Single 802.1X       Disabled             Disabled              Disabled
```

radius-qos: The command lets you configure the RADIUS-assigned QoS mode

Syntax: **radius-qos** disable/ enable

Parameter : **disable:** Disable RADIUS-assigned QoS

Enable: Enable RADIUS-assigned QoS

EXAMPLE:

```
Switch(nas)# radius-qos enable
Switch(nas)# show config
Mode                                : Enabled
Reauthentication                     : Disabled
Reauthentication Period              : 3600
EAPOL Timeout                       : 8888
Age Period                          : 9999
Hold Time                           : 7777
RADIUS QoS                          : Enabled
RADIUS VLAN                         : Disabled
Guest VLAN                          : Enabled
Guest VLAN ID                       : 90
Maximum Reauthentication Count       : 150
Allow Guest VLAN if EAPOL Frame Seen : Enabled
```

radius-vlan:

The command lets you configure the RADIUS-assigned VLAN mode

Syntax: **radius-vlan** disable/ enable

Parameter : **disable:** Disable RADIUS-assigned VLAN

Enable: Enable RADIUS-assigned VLAN

EXAMPLE:

```
Switch(nas)# radius-vlan enable
Switch(nas)# show config
Mode                                : Enabled
Reauthentication                     : Disabled
Reauthentication Period              : 3600
EAPOL Timeout                       : 8888
Age Period                          : 9999
Hold Time                           : 7777
RADIUS QoS                          : Enabled
RADIUS VLAN                         : Enabled
Guest VLAN                          : Enabled
Guest VLAN ID                       : 90
Maximum Reauthentication Count       : 150
Allow Guest VLAN if EAPOL Frame Seen : Enabled
```

reauth-period:

The command lets you configure the period between reauthentications

Syntax: **reauth-period** <1-3600>

Parameter : **<1-3600>:** Period between reauthentications

EXAMPLE:

```
Switch(nas)# reauth-period 666
Switch(nas)# show config
Mode                                : Enabled
Reauthentication                     : Disabled
Reauthentication Period              : 666
EAPOL Timeout                       : 8888
Age Period                          : 9999
Hold Time                           : 7777
RADIUS QoS                          : Enabled
RADIUS VLAN                         : Enabled
Guest VLAN                          : Enabled
Guest VLAN ID                        : 90
Maximum Reauthentication Count       : 150
Allow Guest VLAN if EAPOL Frame Seen : Enabled
```

reauthentication: The command lets you configure the NAS reauthentication mode

Syntax: **reauthentication** disable/ enable

Parameter : **disable:** Disable NAS reauthentication

Enable: Enable NAS reauthentication

EXAMPLE:

```
Switch(nas)# reauthentication enable
Switch(nas)# show config
Mode                                : Enabled
Reauthentication                     : Enabled
Reauthentication Period              : 666
EAPOL Timeout                       : 8888
Age Period                          : 9999
Hold Time                           : 7777
RADIUS QoS                          : Enabled
RADIUS VLAN                         : Enabled
Guest VLAN                          : Enabled
Guest VLAN ID                        : 90
Maximum Reauthentication Count       : 150
Allow Guest VLAN if EAPOL Frame Seen : Enabled
```

reatart: The command lets you restart NAS authentication process

Syntax: **restart** <port-list> reauthenticate/ reinitialize

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5
reauthenticate: Schedules a reauthentication whenever the quiet-period of the port runs out (EAPOL-based authentication). For MAC-based authentication, reauthentication will be attempted immediately

reinitialize: Forces a reinitialization of the clients on the port and

thereby a reauthentication immediately

EXAMPLE:

```
Switch(nas)# restart 1 reauthenticate
```

show: Show NAS information

Syntax: **show** config / port-config/ status

show statistics <port-list>

Parameter : **config:** Show NAS configuration

port-config: Show NAS port configuration

statistics: Show NAS statistics

<port-list>: available value is from switch physical port density, format: 1,3-5

status: Show NAS status

EXAMPLE:

```
Switch(nas)# show config
Mode                                : Disabled
Reauthentication                     : Disabled
Reauthentication Period              : 3600
EAPOL Timeout                       : 30
Age Period                          : 300
Hold Time                           : 10
RADIUS QoS                          : Disabled
RADIUS VLAN                         : Disabled
Guest VLAN                          : Disabled
Guest VLAN ID                       : 1
Maximum Reauthentication Count       : 2
Allow Guest VLAN if EAPOL Frame Seen : Disabled


Switch(nas)# show port-config
Port  Admin State         RADIUS-Assigned QoS  RADIUS-Assigned VLAN  Guest VLAN
----  ------------------  -------------------  --------------------
----------
1     Force Authorized    Disabled             Disabled              Disabled
2     Force Authorized    Disabled             Disabled              Disabled
3     Force Authorized    Disabled             Disabled              Disabled
4     Force Authorized    Disabled             Disabled              Disabled


Switch(nas)# show statistics 1

Port 1 EAPOL Statistics:
Rx Total                            0  Tx Total                           0
Rx Response/Id                       0  Tx Request/Id                       0
Rx Response                         0  Tx Request                          0
Rx Start                            0
Rx Logoff                           0
Rx Invalid Type                      0
Rx Invalid Length                    0

Port 1 Backend Server Statistics:
Rx Access Challenges                 0  Tx Responses                        0
Rx Other Requests                    0
Rx Auth. Successes                   0
Rx Auth. Failures                    0


Switch(nas)# show status
Port Port State           Last Source       Last ID            QoS VLAN
---- -------------------- ----------------- ------------------ ---
------------
1    Link Down            -                 -
2    Link Down            -                 -
3    Link Down            -                 -
4    Link Down            -                 -
```

Chapter 32 Port configuration Commands of CLI

Port

This chapter describes how to view the current port configuration and how to configure ports to non-default settings, including:
Linkup/Linkdown
Speed (Current and configured)
Flow Control (Current Rx, Current Tx and Configured)
Maximum Frame Size
Excessive Collision Mode
Power Control.

Table 31: Port Commands

Command	Function
clear	Clear port counter
description	Interface specific description
excessive-collision	Configure excessive collision operation
flow-control	Configure flow operation
max-frame	Configure maximum receive frame size
port-state	Configure port state operation
power-saving	Configure power saving operation
show	Show port information
speed-duplex	Configure speed duplex operation

clear: The command lets you clear port counters

Syntax: **clear** <port-list>

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5

EXAMPLE:

Publication date: Feb., 2012
Revision A1

```
Switch(port)# clear 1
Switch(port)# show simple-counter
Port       Packets              Bytes          Errors     Drops    Filtered
------ ------------------ -------------------- ---------- ---------- ----------
  1/Rx                 0                    0          0          0          0
  1/Tx                 0                    0          0          0
--------------------------------------------------------------------------------
--
  2/Rx                 0                    0          0          0          0
  2/Tx                 0                    0          0          0
--------------------------------------------------------------------------------
--
  3/Rx                 0                    0          0          0          0
  3/Tx                 0                    0          0          0
--------------------------------------------------------------------------------
-
```

description: The command lets you display Interface specific description

Syntax: **description** <port-list> <LINE>

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5
<LINE>: Up to 47 characters describing this interface

EXAMPLE:

```
Switch(port)# description 1 david
Switch(port)# show configuration
Port  State    Speed Duplex  Flow Control  Max. Frame  Excessive  Power
Description
--------------------------------------------------------------------------------
---
1     Enabled  Auto         -            10056       -          -
david
--------------------------------------------------------------------------------
---
2     Enabled  Auto         -            10056       -          -

--------------------------------------------------------------------------------
---
3     Enabled  Auto         -            10056       -          -

--------------------------------------------------------------------------------
---
```

excessive-collision: The command lets you configure excessive collision operation

Syntax: **excessive-collision** <port-list> discard/ restart

Parameter : **<port-list>:** available value is from switch TP port number, format: 1,3-5
discard: Discard the packet when excessive collisions occur
restart: Retransmit the packet, regardless of the number of collisions

EXAMPLE:

```
Switch(port)# excessive-collision 21 restart
Switch(port)# show configuration
Port  State    Speed Duplex  Flow Control  Max. Frame  Excessive  Power
Description
------------------------------------------------------------------------------
---
1     Enabled  Auto          -            10056       -          -
david
------------------------------------------------------------------------------
---
2     Enabled  Auto          -            10056       -          -
------------------------------------------------------------------------------
---
21    Enabled  SFP_Auto_AMS  Disabled     10056       Restart    Disabled

------------------------------------------------------------------------------
---
22    Enabled  SFP_Auto_AMS  Disabled     10056       Discard    Disabled

------------------------------------------------------------------------------
---
```

flow-control: The command lets you configure flow operation

Syntax: **flow-control** <port-list> disable/ enable

Parameter : **<port-list>:** available value is from switch TP port number, format: 1,3-5

disable: Disable flow control operation

enable: Enable flow control operation

EXAMPLE:

```
Switch(port)# flow-control 21 enable
Switch(port)# show configuration
Port  State    Speed Duplex  Flow Control  Max. Frame  Excessive  Power
Description
------------------------------------------------------------------------------
---
1     Enabled  Auto         -            10056       -          -
david
------------------------------------------------------------------------------
---
2     Enabled  Auto         -            10056       -          -


------------------------------------------------------------------------------
---
21    Enabled  SFP_Auto_AMS  Enabled      10056       Restart    Disabled

------------------------------------------------------------------------------
---
22    Enabled  SFP_Auto_AMS  Disabled     10056       Discard    Disabled

------------------------------------------------------------------------------
---
23    Enabled  SFP_Auto_AMS  Disabled     10056       Discard    Disabled

------------------------------------------------------------------------------
```

max-frame: The command lets you configure maximum receive frame size

Syntax: **max-frame** <port-list> <1518-10056>

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5
<1518-10056>: Maximum receive frame size in bytes

EXAMPLE:

```
Switch(port)# max-frame 1 1600
Switch(port)# show configuration
Port  State    Speed Duplex  Flow Control  Max. Frame  Excessive  Power
Description
------------------------------------------------------------------------------
---
1     Enabled  Auto         -              1600       -          -
david
------------------------------------------------------------------------------
---
2     Enabled  Auto         -              10056      -          -

------------------------------------------------------------------------------
---
3     Enabled  Auto         -              10056      -          -
```

port-state: The command lets you configure port state operation

Syntax: **port-state** <port-list> disable/ enable

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5
disable: Disable port state operation
enable: Enable port state operation

EXAMPLE:

```
Switch(port)# port-state 1 disable
Switch(port)# show configuration
Port  State    Speed Duplex  Flow Control  Max. Frame  Excessive  Power
Description
------------------------------------------------------------------------------
---
1     Disabled Auto          -            1600        -          -
david
------------------------------------------------------------------------------
---
2     Enabled  Auto          -            10056       -          -

------------------------------------------------------------------------------
---
3     Enabled  Auto          -            10056       -          -
```

power-saving:

The command lets you configure power saving operation

Syntax: **power-saving** <port-list> actiphy/ disable/ dynamic/ enable

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5
actiphy: Enable ActiPHY power control
disable: Disable power saving
dynamic: Enable dynamic power control
enable: Enable power saving

EXAMPLE:

Publication date: Feb., 2012
Revision A1

```
Switch(port)# power-saving 21 actiphy
Switch(port)# power-saving 22 dynamic
Switch(port)# power-saving 23 enable
Switch(port)# show configuration
Port  State    Speed Duplex  Flow Control  Max. Frame  Excessive  Power
Description
------------------------------------------------------------------------------
---
1     Disabled Auto         -            1600       -         -
david
------------------------------------------------------------------------------
---
2     Enabled  Auto         -            10056      -         -

------------------------------------------------------------------------------
---
21    Enabled  SFP_Auto_AMS  Enabled      10056      Restart   ActiPHY

------------------------------------------------------------------------------
---
22    Enabled  SFP_Auto_AMS  Disabled     10056      Discard   Dynamic

------------------------------------------------------------------------------
---
23    Enabled  SFP_Auto_AMS  Disabled     10056      Discard   Enabled

------------------------------------------------------------------------------
---
24    Enabled  SFP_Auto_AMS  Disabled     10056      Discard   Disabled

------------------------------------------------------------------------------
---
```

Show: The command lets you show port information

Syntax: **show** configuration

detail-counter <port-list>

sfp <port-list>

simple-counter

status <port-list>

Parameter : **configuration:** Show port configuration

detail-counter: Show detailed traffic statistics for specific switch port

<port-list>: Port number

sfp: Show sfp information

<port-list>: SFP port number, available value is from SFP port number

simple-counter: Show general traffic statistics for all switch ports

status: Show port status

<port-list>: available value is from switch physical port density, format: 1,3-5

EXAMPLE:

```
Switch(port)# show simple-counter
Port       Packets              Bytes          Errors     Drops    Filtered
------ ------------------ -------------------- ---------- ---------- ----------
  1/Rx                 0                    0          0          0          0
  1/Tx                 0                    0          0          0
--------------------------------------------------------------------------------
---
  2/Rx                 0                    0          0          0          0
  2/Tx                 0                    0          0          0
--------------------------------------------------------------------------------
---
  3/Rx                 0                    0          0          0          0
  3/Tx                 0                    0          0          0
--------------------------------------------------------------------------------
---
  4/Rx                 0                    0          0          0          0
  4/Tx                 0                    0          0          0
--------------------------------------------------------------------------------
---
--------------------------------------------------------------------------------
---
 21/Rx             37999             14338676      10258          6          6
 21/Tx              8922              1817882          0          0
--------------------------------------------------------------------------------
---
 22/Rx                 0                    0          0          0          0
 22/Tx                 0                    0          0          0
--------------------------------------------------------------------------------
---
 23/Rx                 0                    0          0          0          0
 23/Tx                 0                    0          0          0
--------------------------------------------------------------------------------
---
 24/Rx             10875              2276667          0          3          3
 24/Tx             39016             14923782          0          0
```

speed-duplex: The command lets you configure speed duplex operation

Syntax: **speed-duplex <port-list> 10-full/ 10-half…/ 100fx-ams**

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5

10-full: Force speed duplex to 10-full operation

10-half: Force speed duplex to 10-half operation

100-full: Force speed duplex to 100-full operation

100-half: Force speed duplex to 100-half operation

1000-full: Force speed duplex to 1000-full operation

1000x: Force speed duplex to 1000BASE-X operation

1000x-ams: 1000BASE-X with auto media sense

100fx : Force speed duplex to 100BASE-FX operation

100fx-ams: 100BASE-FX with auto media sense

10g-full: Force speed duplex to 10G-full operation

auto: Enable auto speed duplex configuration

sfp-auto-ams: Auto detection of SFP with auto media sense

EXAMPLE:

```
Switch(port)# speed-duplex 1 100-full
Switch(port)# speed-duplex 2 1000-full
Switch(port)# show configuration
Port  State    Speed Duplex  Flow Control  Max. Frame  Excessive  Power
Description
------------------------------------------------------------------------------
---
1     Disabled 100 Full      -            1600        -          -
david
------------------------------------------------------------------------------
---
2     Enabled  1G Full       -            10056       -          -

------------------------------------------------------------------------------
---
```

Chapter 33 Port security Commands of CLI

Port security

This section shows you how to configure the Port Security settings of the Switch. You can use the Port Security feature to restrict input to an interface by limiting and identifying MAC addresses.

Table 32: Port security Commands

Command	Function
action	Configure the action involved with exceeding the limit
aging	Configure the aging mode and period
limit	Configure the max. number of MAC addresses that can be learned on the port
mode	Configure the global limit control mode
port-mode	Configure the port mode
reopen	Reopen one or more ports whose limit is exceeded and shut down
show	Show port security status

action:

The command lets you configure the action involved with exceeding the limit

Syntax: **action** <port-list> both/ none/ shutdown/ trap

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5

both: Send a SNMP trap and shutdown the port

none: Do nothing

shutdown: Shutdown the port

trap: Send a SNMP trap

EXAMPLE:

```
Switch(port-security)# action 1 both
Switch(port-security)# action 2 none
Switch(port-security)# action 3 shutdown
Switch(port-security)# action 4 trap
Switch(port-security)# show config
Mode      : Disabled
Aging     : Disabled
Age Period: 3600

Port  Mode      Limit  Action
----  --------  -----  ---------------
1     Disabled      4  Trap & Shutdown
2     Disabled      4  None
3     Disabled      4  Shutdown
4     Disabled      4  Trap
5     Disabled      4  None
```

aging:

The command lets you configure the aging mode and period

Syntax: **aging** disable

enable <10-10000000>

Parameter : **disable:** Disable aging

enable: Enable aging

<10-10000000>: Aging time in seconds between checks for activity on a MAC address

EXAMPLE:

```
Switch(port-security)# aging enable 20
Switch(port-security)# show config
Mode      : Disabled
Aging     : Enabled
Age Period: 20
```

limit:

The command lets you configure the max. number of MAC addresses that can be learned on the port

Syntax: **limit** <port-list> <1-1024>

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5

<1-1024>: Max. number of MAC addresses on selected port

EXAMPLE:

```
Switch(port-security)# limit 1 999
Switch(port-security)# show config
Mode      : Disabled
Aging     : Enabled
Age Period: 20

Port  Mode      Limit  Action
----  --------  -----  ---------------
1     Disabled    999  Trap & Shutdown
2     Disabled      4  None
3     Disabled      4  Shutdown
```

mode:

The command lets you configure the global limit control mode

Syntax: **mode** disable/ enable

Parameter : **disable:** Globally disable port security

enable: Globally enable port security

EXAMPLE:

```
Switch(port-security)# mode enable
Switch(port-security)# show config
Mode      : Enabled
Aging     : Enabled
Age Period: 20
```

port-mode:

The command lets you configure the port mode

Syntax: **port-mode** <port-list> disable/ enable

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5
disable: Disable port security on selected port

enable: Enable port security on selected port

EXAMPLE:

```
Switch(port-security)# port-mode 1 enable
Switch(port-security)# show config
Mode      : Disabled
Aging     : Enabled
Age Period: 20

Port  Mode      Limit  Action
----  --------  -----  ---------------
1     Enabled     999  Trap & Shutdown
2     Disabled      4  None
3     Disabled      4  Shutdown
4     Disabled      4  Trap
5     Disabled      4  None
```

reopen: The command lets you to reopen one or more ports whose limit is exceeded and shut down

Syntax: **reopen** <port-list>

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5

EXAMPLE:

```
Switch(port-security)# reopen 1
Switch(port-security)# show config
Mode      : Disabled
Aging     : Enabled
Age Period: 20

Port  Mode      Limit  Action
----  --------  -----  ---------------
1     Enabled     999  Trap & Shutdown
2     Disabled      4  None
3     Disabled      4  Shutdown
4     Disabled      4  Trap
```

show: The command lets you show port security status

Syntax: **show** config/ switch-status

port-status <port>

Parameter : **config:** Show port security configuration

port-status: Show MAC addresses learned by port security

<port>: Port number, available value is from switch physic port density

switch-status: Show port security switch status

EXAMPLE:

```
Switch(port-security)# show config
Mode      : Disabled
Aging     : Disabled
Age Period: 3600

Port  Mode      Limit  Action
----  --------  -----  ---------------
1     Disabled      4  None
2     Disabled      4  None
3     Disabled      4  None
4     Disabled      4  None


Switch(port-security)# show port-status 1
MAC Address        VID   State       Time of Addition           Age/Hold Time
-----------------  ----  ----------  -------------------------  -------------
<none>


Switch(port-security)# show switch-status
Users:
L = Limit Control
8 = 802.1X
D = DHCP Snooping

Port  Users  State          MAC Count
----  -----  -------------  ---------
1     ---    Disabled       0
2     ---    Disabled       0
3     ---    Disabled       0
```

Chapter 34 Privilege level Commands of CLI

privilege

This page provides an overview of the privilege levels. The switch provides user set Account, Aggregation, Diagnostics, EEE, GARP, GVRP, IP, IPMC Snooping LACP LLDP LLDP MED MAC Table MRP MVR MVRP Maintenance Mirroring POE Ports Private VLANs QoS SMTP SNMP Security Spanning Tree System Trap Event VCL VLANs Voice VLAN Privilege Levels form 1 to 15 .

Table 33: privilege Commands

Command	Function
group	Configure a privilege level group
show	Show privilege configuration

group: The command lets you configure a privilege level group

Syntax: **group** <group-name> <1-15>

Parameter : **<group-name>:** Privilege group name

<1-15>: Privilege level

EXAMPLE:

```
Switch(privilege)# group account 13
Switch(privilege)# show
Privilege Current Level: 15

Group Name                      Privilege Level
------------------------------  ----------------
Account                        13
Aggregation                     10
Diagnostics                     10
```

show: The command lets you show privilege configuration

Syntax: **show** <cr>

Parameter : **<cr>** means press the Enter key.

EXAMPLE:

```
Switch(privilege)# show
Privilege Current Level: 15

Group Name                        Privilege Level
--------------------------------  ----------------
Account                           13
Aggregation                        10
Diagnostics                        10
EPS                               10
ERPS                              10
ETH_LINK_OAM                       10
EVC                               10
GARP                              10
GVRP                              10
IP                                10
IPMC_Snooping                      10
LACP                              10
LLDP                              10
LLDP_MED                           10
Loop_Protect                       10
MAC_Table                          10
MEP                               10
MVR                               10
Maintenance                        15
Mirroring                          10
PTP                               10
Ports                             10
Private_VLANs                      10
QoS                               10
SMTP                              10
SNMP                              10
Security                           10
Spanning_Tree                      10
System                            10
Trap_Event                         10
VCL                               10
VLAN_Translation                   10
VLANs                             10
```

Chapter 35 Private VLAN Commands of CLI

Private VLAN

In a private VLAN, communication between ports in that private VLAN is not permitted. A VLAN can be configured as a private VLAN.

Table 34: Private VLAN Commands

Command	Function
delete	Delete private VLAN group
port-isolate	Configure port isolation
private-vlan	Configure private VLAN group
show	Show private VLAN information

delete: The command lets you delete private VLAN group

Syntax: **delete** private-vlan <1- X>

Parameter : **private-vlan:** private VLAN KEYWORD

<1- X>: Private VLAN ID. The allowed range for a Private VLAN ID is the same as the switch port number range

EXAMPLE:

```
Switch(pvlan)# delete private-vlan 12
```

NOTE: In Private VLAN ID **<1-X>**, the number X is the max value you can set based on the port count on the switch.

port-isolate: The command lets you configure port isolation

Syntax: **port-isolate** <port-list> disable/ enable

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5
disable: Disable port isolation

enable: Enable port isolation

EXAMPLE:

Publication date: Feb., 2012
Revision A1

```
Switch(pvlan)# port-isolate 1 enable
Switch(pvlan)# show port-isolate
Port  Isolation
----  ---------
1     Enabled
2     Disabled
3     Disabled
4     Disabled
```

private-vlan: The command lets you configure private VLAN group

Syntax: **private-vlan** <1-X>

Parameter : **<1-X>:** Private VLAN ID. The allowed range for a Private VLAN ID is the same as the switch port number range

EXAMPLE:

```
Switch(pvlan)# private-vlan 2 10
Switch(pvlan)# show private-vlan
PVLAN ID  Ports
--------  ---------------
1         1-26
2         10
```

NOTE: In Private VLAN ID **<1-X>**, the number X is the max value you can set based on the port count on the switch.

show: The command lets you show private VLAN information

Syntax: **show** port-isolate/ private-vlan

Parameter : **port-isolate:** Show port isolation information

private-vlan: Show private VLAN membership information

EXAMPLE:

```
Switch(pvlan)# show port-isolate
Port  Isolation
----  ---------
1     Disabled
2     Disabled
3     Disabled
4     Disabled
5     Disabled Switch(garp)#


Switch(pvlan)# show private-vlan
PVLAN ID  Ports
--------  ---------------
1         1-29
```

NOTE: The default Private VLAN includes all port members on the switch. Use 29-port switch as example.

Chapter 36 QoS Commands of CLI

QoS

The switch supports four QoS queues per port with strict or weighted fair queuing scheduling. It supports QoS Control Lists (QCL) for advance programmable QoS classification, based on IEEE 802.1p, Ethertype, VID, IPv4/IPv6 DSCP and UDP/TCP ports and ranges.

The switch provides high flexibility when classifying incoming frames to a QoS class. The QoS classification looks for information up to Layer 4, including IPv4 and IPv6 DSCP, IPv4 TCP/UDP port numbers, and user priority of tagged frames. This QoS classification mechanism is implemented in a QoS control list (QCL). The QoS class assigned to a frame is used throughout the device for providing queuing, scheduling, and congestion control guarantees to the frame according to what was configured for that specific QoS class.

The switch supports advanced memory control mechanisms providing excellent performance of all QoS classes under any traffic scenario, including jumbo frame. It provides a super priority queue with dedicated memory and strict highest priority in the arbitration. The ingress super priority queue allows traffic recognized as CPU traffic to be received and queued for transmission to the CPU even when all the QoS class queues are congested.

Table 35: QoS Commands

Command	Function
delete	Delete QCE
dscp-classification	Configure DSCP ingress classification
dscp-map	Configure DSCP mapping table. This table is used to map QoS class and DP level based on DSCP value. DSCP value used to map QoS class and DPL is either translated DSCP value or incoming frame DSCP value
dscp-remap	Configure DSCP egress remap table. This table is used if the port egress remarking mode is 'remap' and the purpose is to map the DSCP and DP level to a new DSCP value
dscp-translation	Configure global ingress DSCP translation table. If port DSCP translation is enabled, translation table is used to translate incoming frame's DSCP value and the translated value is used to map QoS class and DP level
dscp-trust	Configure trusted DSCP value used for QoS classification. The DSCP value to be checked for trust is either a translated value if DSCP translation is enabled for the ingress port or incoming frame DSCP value if translation is disabled for the port. Trusted DSCP value is only used for QoS classification
port-classify	QoS ingress port classification
port-dscp	QoS port DSCP configuration
port-policer	Port policer

port-scheduler	QoS egress port schedulers
port-shaper	Port shaper
qce	Add or modify QoS control entry
queue-shaper	Queue shaper
show	Show QoS information
storm	Configure storm rate control
tag-remarking	QoS egress port tag remarking
show	Show the GVRP configuration

delete: The command lets you delete QCE

Syntax: **delete** <1-256>

Parameter : **<1-256>:** QCE ID must be exist

EXAMPLE:

```
Switch(qos)# delete 1
```

NOTE: If you set the GVRP on port then you could show the port GVRP statistics information or clear all records on port.

dscp-classification: The command lets you configure DSCP ingress classification

Syntax: **dscp-classification** map <class-list> <0-63>
mode <dscp-list> disable/ enable

Parameter : **map:** Configure DSCP ingress classification mapping table. This table is used to map DSCP from QoS class and DP level. The DSCP needs to be classified depending on port DSCP classification and DSCP classification mode. Incoming frame DSCP may be translated before using the value for classification

<class-list>: QoS class list, available value is from 0 to 7

<0-63>: Mapped DSCP

mode: Configure DSCP ingress classification mode. If port DSCP classification is 'selected', DSCP will be classified based on QoS class and DP level only for DSCP value with classification mode 'enabled'. DSCP may be translated DSCP if translation is enabled for the port

<dscp-list>: DSCP list, format : 1,3,5-7

disable: Disable DSCP ingress classification

enable: Enable DSCP ingress classification

EXAMPLE:

```
Switch(qos)# dscp-classification map 7 10
Switch(qos)# show class-map
QoS Class  DSCP
---------  ----
0          0
1          0
2          0
3          0
4          0
5          0
6          0
7          10


Switch(qos)# dscp-classification mode 1 enable
Switch(qos)# show dscp-translation
      Ingress      Ingress   Egress
DSCP  Translation  Classify  Remap
----  -----------  --------  ---------
0     0            Disabled  0
1     1            Enabled   1
2     2            Disabled  2
3     3            Disabled  3
4     4            Disabled  4
```

dscp-map: The command lets you configure DSCP mapping table

Syntax: **dscp-map** <dscp-list> <0-7> <0-3>

Parameter : **<dscp-list>:** DSCP list, format : 1,3,5-7

<0-7>: QoS classenable The parameter let you enable GVRP function on port.

<0-3>: Drop Precedence Level

EXAMPLE:

```
Switch(qos)# dscp-map 2 6 2
Switch(qos)# show dscp-map
DSCP   Trust     QoS Class  DP Level
---------  --------  ---------  --------
0  (BE)    Disabled  0          0
1          Disabled  0          0
2          Disabled  6          2
3          Disabled  0          0
```

dscp-remap: The command lets you configure DSCP egress remap table

Syntax: **dscp-remap** <dscp-list> <0-63>

Parameter : **<dscp-list>:** DSCP list, format : 1,3,5-7

<0-63>: Egress remapped DSCP

EXAMPLE:

```
Switch(qos)# dscp-remap 3 44
Switch(qos)# show dscp-translation
      Ingress      Ingress   Egress
DSCP  Translation  Classify  Remap
----  -----------  --------  ---------
0     0            Disabled  0
1     1            Enabled   1
2     2            Disabled  2
3     3            Disabled  44
4     4            Disabled  4
```

dscp-translation:

The command lets you configure global ingress DSCP translation table

Syntax: **dscp-translation** <dscp-list> <0-63>

Parameter : **<dscp-list>:** DSCP list, format : 1,3,5-7

<0-63>: Translated DSCP

EXAMPLE:

```
Switch(qos)# dscp-translation 4 55
Switch(qos)# show dscp-translation
      Ingress      Ingress   Egress
DSCP  Translation  Classify  Remap
----  -----------  --------  ---------
0     0            Disabled  0
1     1            Enabled   1
2     2            Disabled  2
3     3            Disabled  44
4     55           Disabled  4
5     5            Disabled  5
```

dscp-trust:

The command lets you configure trusted DSCP value that is used for QoS classification

Syntax: **dscp-trust** <port-list>

Parameter : **<dscp-list>:** DSCP list, format : 1,3,5-7

disable: Set DSCP as untrusted DSCP

enable: Set DSCP as trusted DSCP

EXAMPLE:

```
Switch(qos)# dscp-trust 6 enable
Switch(qos)# show dscp-map
DSCP   Trust     QoS Class  DP Level
---------  --------  ---------  --------
0  (BE)    Disabled  0          0
1          Disabled  0          0
2          Disabled  6          2
3          Disabled  0          0
4          Disabled  0          0
5          Disabled  0          0
6          Enabled   0          0
7          Disabled  0          0
```

port-classify: The command lets you configure QoS ingress port classification

Syntax: **port-classify** class <port-list> <0-7>

dei <port-list> <0-1>

dpl <port-list> <0-3>

dscp <port-list> disable/ enable
map <port-list> <0-7> <0-1> <0-7> <0-3>

pcp <port-list> <0-7>

tag <port-list> disable/ enable

Parameter : **class:** Configure the default QoS class

<port-list>: available value is from switch physical port density, format: 1,3-5

<0-7>: QoS class for frames not classified in any other way. There is a one to one mapping between QoS class, queue and priority. A QoS class of 0 (zero) has the lowest priority

dei: Configure the default DEI for untagged frames

<port-list>: available value is from switch physical port density, format: 1,3-5

<0-1>: Drop Eligible Indicator. It is a 1-bit field in the VLAN tag

dpl: Configure the default DP level

<port-list>: available value is from switch physical port density, format: 1,3-5

<0-3>: DP level for frames not classified in any other way

dscp: Configure DSCP based classification mode

<port-list>: available value is from switch physical port density, format: 1,3-5

disable: Disable DSCP based classification

enable: Enable DSCP based classification

map: Configure the port classification map. This map is used when port classification tag is enabled, and the purpose is to translate the Priority Code Point (PCP) and Drop Eligible Indicator (DEI) from a tagged frame to QoS class and DP level

<port-list>: available value is from switch physical port density,

format: 1,3-5

<0-7>: Priority Code Point

<0-1>: Drop Eligible Indicator

<0-7>: QoS class

<0-3>: Drop precedence level

pcp: Configure the default PCP for untagged frames

<port-list>: available value is from switch physical port density, format: 1,3-5

<0-7>: Priority Code Point. It is a 3-bit field storing the priority level for the 802.1Q frame

tag: Configure the classification mode for tagged frames

<port-list>: available value is from switch physical port density, format: 1,3-5

disable: Use default QoS class and DP level for tagged frames

enable: Use mapped versions of PCP and DEI for tagged frames

EXAMPLE:

```
Switch(qos)# port-classify class 7 4
Switch(qos)# show port-classify
Port  QoS class  DP level  PCP  DEI  Tag class.  DSCP Based
----  ---------  --------  ---  ---  ----------  ----------
1     0          0         0    0    Disabled    Disabled
2     0          0         0    0    Disabled    Disabled
3     0          0         0    0    Disabled    Disabled
4     0          0         0    0    Disabled    Disabled
5     0          0         0    0    Disabled    Disabled
6     0          0         0    0    Disabled    Disabled
7     4          0         0    0    Disabled    Disabled
8     0          0         0    0    Disabled    Disabled


Switch(qos)# port-classify dei 1 1
Switch(qos)# show port-classify
Port  QoS class  DP level  PCP  DEI  Tag class.  DSCP Based
----  ---------  --------  ---  ---  ----------  ----------
1     0          0         0    1    Disabled    Disabled
2     0          0         0    0    Disabled    Disabled
3     0          0         0    0    Disabled    Disabled


Switch(qos)# port-classify dpl 2 3
Switch(qos)# show port-classify
Port  QoS class  DP level  PCP  DEI  Tag class.  DSCP Based
----  ---------  --------  ---  ---  ----------  ----------
1     0          0         0    1    Disabled    Disabled
2     0          3         0    0    Disabled    Disabled
3     0          0         0    0    Disabled    Disabled
```

```
Switch(qos)# port-classify dscp 3 enable
Switch(qos)# show port-classify
Port  QoS class  DP level  PCP  DEI  Tag class.  DSCP Based
----  ---------  --------  ---  ---  ----------  ----------
1     0          0         0    1    Disabled    Disabled
2     0          3         0    0    Disabled    Disabled
3     0          0         0    0    Disabled    Enabled


Switch(qos)# port-classify map 4 5 1 6 3
Switch(qos)# show port-map 4
Port  PCP  DEI  QoS class  DP level
----  ---  ---  ---------  --------
4     0    0    1          0
      0    1    1          1
      1    0    0          0
      1    1    0          1
      2    0    2          0
      2    1    2          1
      3    0    3          0
      3    1    3          1
      4    0    4          0
      4    1    4          1
      5    0    5          0
      5    1    6          3
      6    0    6          0
      6    1    6          1
      7    0    7          0
      7    1    7          1
```

```
Switch(qos)# port-classify pcp 5 3
Switch(qos)# show port-classify
Port  QoS class  DP level  PCP  DEI  Tag class.  DSCP Based
----  ---------  --------  ---  ---  ----------  ----------
1     0          0         0    1    Disabled    Disabled
2     0          3         0    0    Disabled    Disabled
3     0          0         0    0    Disabled    Enabled
4     0          0         0    0    Disabled    Disabled
5     0          0         3    0    Disabled    Disabled


Switch(qos)# port-classify tag 6 enable
Switch(qos)# show port-classify
Port  QoS class  DP level  PCP  DEI  Tag class.  DSCP Based
----  ---------  --------  ---  ---  ----------  ----------
1     0          0         0    1    Disabled    Disabled
2     0          3         0    0    Disabled    Disabled
3     0          0         0    0    Disabled    Enabled
4     0          0         0    0    Disabled    Disabled
5     0          0         3    0    Disabled    Disabled
6     0          0         0    0    Enabled     Disabled
```

port-dscp: The command lets you do QoS port DSCP configuration

Syntax: **port-dscp** <port-list>

Parameter : **classification:** Configure DSCP classification based on QoS class and DP level. This enables per port to map new DSCP value based on QoS class and DP level

<port-list>: available value is from switch physical port density, format: 1,3-5

all: Classify all DSCP

disable: Disable DSCP ingress classification

selected: Classify only selected DSCP for which classification is enabled as specified in DSCP Translation window for the specific DSCP

zero: Classify DSCP if DSCP = 0

egress-remark: Configure the port DSCP remarking mode

<port-list>: available value is from switch physical port density, format: 1,3-5

disable: Disable DSCP egress rewrite

enable: Enable DSCP egress rewrite with the value received from analyzer

remap: Rewrite DSCP in egress frame with remapped DSCP

translation: Configure DSCP ingress translation mode. If translation is enabled for a port, incoming frame DSCP value is translated and the translated value is used for QoS classification

<port-list>: available value is from switch physical port density, format: 1,3-5

disable: Disable DSCP ingress translation

enable: Enable DSCP ingress translation

EXAMPLE:

```
Switch(qos)# port-dscp classification 1 all
Switch(qos)# port-dscp classification 2 selected
Switch(qos)# port-dscp classification 3 zero
Switch(qos)# show port-dscp
Port  DSCP translation  Ingress classification  Egress remark
----  ----------------  ----------------------  -------------
1     Disabled          All                     Disabled
2     Disabled          Selected                Disabled
3     Disabled          DSCP = 0                Disabled
4     Disabled          Disabled                Disabled


Switch(qos)# port-dscp egress-remark 4 enable
Switch(qos)# port-dscp egress-remark 5 remap
Switch(qos)# show port-dscp
Port  DSCP translation  Ingress classification  Egress remark
----  ----------------  ----------------------  -------------
1     Disabled          All                     Disabled
2     Disabled          Selected                Disabled
3     Disabled          DSCP = 0                Disabled
4     Disabled          Disabled                Enabled
5     Disabled          Disabled                Remapped


Switch(qos)# port-dscp translation 6 enable
Switch(qos)# show port-dscp
Port  DSCP translation  Ingress classification  Egress remark
----  ----------------  ----------------------  -------------
1     Disabled          All                     Disabled
2     Disabled          Selected                Disabled
3     Disabled          DSCP = 0                Disabled
4     Disabled          Disabled                Enabled
5     Disabled          Disabled                Remapped
6     Enabled           Disabled                Disabled
```

port-policer: The command lets you do Port policer

Syntax: **port-policer** flow-control/ mode <port-list> disable/ enable
rate <port-list> Kbps/… fps <1-10000>/<100-10000000>

Parameter : **flow-control:** Configure the port policer flow control mode

mode: Configure the port policer mode

rate: Configure the port policer rate

Kbps: Rate in kilo bits per second (Kbps)
<100-10000000>: Rate
Kfps: Rate in kilo frame per second (Kfps)
<1-10000>: Rate
Mbps: Rate in mega bits per second (Mbps)
<1-10000>: Rate
fps: Rate in frame per second (fps)
<100-10000000>: Rate

<port-list>: available value is from switch physical port density, format: 1,3-5
disable: Disable port policer flow control

enable: Enable port policer flow control

EXAMPLE:

```
Switch(qos)# port-policer flow-control 1 enable
Switch(qos)# show port-policer
Port  Mode      Rate       Flow Control
----  --------  ---------  ------------
1     Disabled   500 kbps  Enabled
2     Disabled   500 kbps  Disabled
3     Disabled   500 kbps  Disabled
4     Disabled   500 kbps  Disabled


Switch(qos)# port-policer mode 2 enable
Switch(qos)# show port-policer
Port  Mode      Rate       Flow Control
----  --------  ---------  ------------
1     Disabled   500 kbps  Disabled
2     Enabled    500 kbps  Disabled
3     Disabled   500 kbps  Disabled
4     Disabled   500 kbps  Disabled


Switch(qos)# port-policer rate 3 mbps 99
Switch(qos)# show port-policer
Port  Mode      Rate       Flow Control
----  --------  ---------  ------------
1     Disabled   500 kbps  Disabled
2     Disabled   500 kbps  Disabled
3     Disabled    99 Mbps  Disabled
4     Disabled   500 kbps  Disabled
```

port-schedulers: The command lets you do QoS egress port schedulers

Syntax: **port-scheduler** mode <port-list> strict/ weighted
weight <port-list> <0-5> <1-100>

Parameter : **mode:** Configure the port scheduler mode

<port-list>: available value is from switch physical port density, format: 1,3-5

strict: Strict priority scheduler mode

weighted: Weighted scheduler mode

weight: Configure the port scheduler weight

<port-list>: available value is from switch physical port density, format: 1,3-5

<0-5>: Weighted queue

<1-100>: Scheduler weight

EXAMPLE:

```
Switch(qos)# port-scheduler mode 1 weighted
Switch(qos)# show scheduler-mode
Port  Mode
----  --------
1     Weighted
2     Strict
3     Strict


Switch(qos)# port-scheduler weight 2 5 99
witch(qos)# show scheduler-weight 2
Port  Queue  Weight
----  -----  ----------
2     0      17  (9%)
      1      17  (9%)
      2      17  (9%)
      3      17  (9%)
      4      17  (9%)
      5      99  (55%)
```

port-shaper: The command lets you do Port shaper

Syntax: **port-shaper** mode <port-list> disable/ enable
rate <port-list> <100-10000000>

Parameter : **mode:** Configure the port shaper mode

<port-list>: available value is from switch physical port density, format: 1,3-5

disable: Disable

enable: Enable

rate: Configure the port shaper rate

<port-list>: available value is from switch physical port density, format: 1,3-5

<100-10000000>: Rate in kilo bits per second (Kbps)

EXAMPLE:

```
Switch(qos)# port-shaper mode 1 enable
Switch(qos)# show port-shaper
Port  Mode      Rate
----  --------  ---------
1     Enabled    500 kbps
2     Disabled   500 kbps
3     Disabled   500 kbps


Switch(qos)# port-shaper rate 2 999
Switch(qos)# show port-shaper
Port  Mode      Rate
----  --------  ---------
1     Enabled    500 kbps
2     Disabled   999 kbps
3     Disabled   500 kbps
4     Disabled   500 kbps
```

qce:

The command lets you add or modify QoS control entry

Syntax: **qce** <1-256> <0-256> <port-list> any/…/ snap

class default/<0-7>

classified-dscp default/<0-63>

dei any/<0-1>

dmac any/…/unicast

sp default/<0-3>

end <cr>

pcp 0-1/ 0-3/2-3/4-5/4-7/ 6-7/any/<0-7>

show <cr>

smac <oui-address>/ any

tag any/disable/enable

vid any/<vlan-range>

Parameter : **<1-256>:** If the QCE ID parameter <qce_id> is specified and an entry with this QCE ID already exists, the QCE will be modified. Otherwise, a new QCE will be added.

<0-256>: If the next QCE ID is non zero, the QCE will be placed before this QCE in the list. If the next QCE ID is zero, the QCE will be placed last in the list.

<port-list>: Port member for QCE

any: Only Ethernet Type frames can match this QCE

etype: Only Ethernet Type frames can match this QCE

ipv4: Only IPv4 frames can match this QCE

ipv6: Only IPv6 frames can match this QCE

llc: Only LLC frames can match this QCE

snap: Only SNAP frames can match this QCE

class: Action of QoS class for this QCE

default: Basic classification

<0-7>: QoS class value

classified-dscp: Action of DSCP for this QCE

default: Basic classification

<0-63>: DSCP value

dei: Specify whether frames can hit the action according to DEI

any: Don't care

<0-1>: Drop Eligible Indicator value

dmac: Configure destination MAC address for this QCE

any: Don't care

broadcast: Frame must be broadcast

multicast: Frame must be multicast

unicast: Frame must be unitcast

dp: Action of drop precedence level for this QCE

default: Basic classification

<0-3>: Drop precedence level

end: Finish QCE setting and return to QoS mode

pcp: Specify whether frames can hit the action according to PCP

0-1: Priority Code Point (0-1)

0-3: Priority Code Point (0-3)

2-3: Priority Code Point (2-3)

4-5: Priority Code Point (4-5)

4-7: Priority Code Point (4-7)

6-7: Priority Code Point (6-7)

any: Don't care

<0-7>: Priority Code Point

show: Show QCE

smac: Configure source MAC address for this QCE

<oui-address>: A frame that hits this QCE matches this source OUI address value

any: Don't care

tag: Specify whether frames can hit the action according to the 802.1Q tagged

any: Don't care

disable: Untagged frame only

enable: Tagged frame only

vid: Specify the VLAN ID filter for this QCE

any: No VLAN ID filter is specified. (VLAN ID filter status is don't-care.)

<vlan-range>: A frame that hits this QCE matches this VLAN range

EXAMPLE:

```
Switch(qos)# qce 13 23 25 etype
Switch(qos/qce-etype)# class 7
Switch(qos/qce-etype)# classified-dscp 63
Switch(qos/qce-etype)# dei 1
Switch(qos/qce-etype)# dmac unicast
Switch(qos/qce-etype)# dp 3
Switch(qos/qce-etype)# pcp 5
Switch(qos/qce-etype)# smac any
Switch(qos/qce-etype)# tag enable
Switch(qos/qce-etype)# vid 21-25
Switch(qos/qce-etype)# show
QCE ID     : 13
Frame Type : Ethernet              Port     : 25,29

VLAN Parameters                    MAC Parameters
---------------                    --------------
Tag        : Tagged                SMAC     : Any
VID        : 21-25                 DMAC Type: Unicast
PCP        : 5
DEI        : 1

Ethernet Parameters                Action Parameters
-------------------                -----------------
Ether Type : Any                   Class    : 7
                                 DP       : 3
                                 DSCP     : 63
```

queue-shaper: The command lets you do Queue shaper

Syntax: **queue-shaper** excess <port-list> <queue-list> disable/ enable

Parameter : **excess:** Configure the port queue excess bandwidth mode

mode: Configure the port queue shaper mode

rate: Configure the port queue shaper rate

<port-list>: available value is from switch physical port density, format: 1,3-5

<queue-list>: Queue list, available value is from 0 to 7

disable: Disable use of excess bandwidth

enable: Enable use of excess bandwidth

EXAMPLE:

```
Switch(qos)# queue-shaper excess 1 7 enable
Switch(qos)# show queue-shaper 1
Port  Queue  Mode      Rate       Excess
----  -----  --------  ---------  --------
1     0      Disabled   500 kbps  Disabled
      1      Disabled   500 kbps  Disabled
      2      Disabled   500 kbps  Disabled
      3      Disabled   500 kbps  Disabled
      4      Disabled   500 kbps  Disabled
      5      Disabled   500 kbps  Disabled
      6      Disabled   500 kbps  Disabled
      7      Disabled   500 kbps  Enabled
```

show: The command lets you show QoS information

Syntax: **show** <port-list>

Parameter :

class-map: Show QoS class and DP level to DSCP mapping

dscp-map: Show DSCP to QoS class and DP level mapping

dscp-translation: Show DSCP ingress and egress translation

port-classify: Show QoS ingress port classification

port-dscp: Show port DSCP configuration

port-map: Show port classification (PCP, DEI) to (QoS class, DP level) mapping table

<port-list>: available value is from switch physical port density, format: 1,3-5

port-policer: Show port policer configuration

port-shaper: Show port shaper configuration

qce: Show QCL control list

<1-256>: QCE ID

qcl-status: Show QCL status

combined: Show the combined status

conflicts: Show all conflict status

static: Show the static user configured status

voice-vlan: Show the status by Voice VLAN

queue-shaper: Show port queue shaper configuration

<port-list>: available value is from switch physical port density, format: 1,3-5

remarking-map: Show port tag remarking mapping table

<port-list>: available value is from switch physical port density, format: 1,3-5

scheduler-mode: Show port scheduler mode configuration

scheduler-weight: Show port scheduler weight configuration

storm: Show storm control configuration

tag-remarking: Show port tag remarking configuration

wred: Show WRED configuration

EXAMPLE:

```
Switch(qos)# show class-map
QoS Class  DSCP
---------  ----
0          0
1          0
2          0
3          0
4          0
5          0
6          0
7          0


Switch(qos)# show dscp-map
DSCP   Trust     QoS Class  DP Level
---------  --------  ---------  --------
0  (BE)    Disabled  0          0
1          Disabled  0          0
2          Disabled  0          0
3          Disabled  0          0


Switch(qos)# show dscp-translation
      Ingress      Ingress   Egress
DSCP  Translation  Classify  Remap
----  -----------  --------  ---------
0     0           Disabled  0
1     1           Disabled  1
2     2           Disabled  2
3     3           Disabled  3


Switch(qos)# show port-classify
Port  QoS class  DP level  PCP  DEI  Tag class.  DSCP Based
----  ---------  --------  ---  ---  ----------  ----------
1     0          0         0    0    Disabled    Disabled
2     0          0         0    0    Disabled    Disabled
3     0          0         0    0    Disabled    Disabled
```

```
Switch(qos)# show port-dscp
Port  DSCP translation  Ingress classification  Egress remark
----  ----------------  ----------------------  -------------
1     Disabled          Disabled                Disabled
2     Disabled          Disabled                Disabled
3     Disabled          Disabled                Disabled


Switch(qos)# show port-map 1
Port  PCP  DEI  QoS class  DP level
----  ---  ---  ---------  --------
1     0    0    1          0
      0    1    1          1
      1    0    0          0


Switch(qos)# show port-policer
Port  Mode      Rate       Flow Control
----  --------  ---------  ------------
1     Disabled   500 kbps  Disabled
2     Disabled   500 kbps  Disabled
3     Disabled   500 kbps  Disabled


Switch(qos)# show port-shaper
Port  Mode      Rate
----  --------  ---------
1     Disabled   500 kbps
2     Disabled   500 kbps
3     Disabled   500 kbps
```

```
Switch(qos)# show qce 200


Switch(qos)# show qcl-status combined
Number of QCEs: 0
Switch(qos)# show qcl-status conflicts
Number of QCEs: 0
Switch(qos)# show qcl-status static
Number of QCEs: 0
Switch(qos)# show qcl-status voice-vlan


Switch(qos)# show queue-shaper 1
Port  Queue  Mode      Rate       Excess
----  -----  --------  ---------  --------
1     0      Disabled   500 kbps  Disabled
      1      Disabled   500 kbps  Disabled
      2      Disabled   500 kbps  Disabled
      3      Disabled   500 kbps  Disabled
      4      Disabled   500 kbps  Disabled
      5      Disabled   500 kbps  Disabled
      6      Disabled   500 kbps  Disabled
      7      Disabled   500 kbps  Disabled


Switch(qos)# show remarking-map 1
Port  QoS class  DP level  PCP  DEI
----  ---------  --------  ---  ---
1     0          0         1    0
      0          1         1    1
      1          0         0    0
      1          1         0    1
      2          0         2    0
      2          1         2    1
      3          0         3    0
      3          1         3    1
      4          0         4    0
      4          1         4    1
      5          0         5    0
      5          1         5    1
      6          0         6    0
      6          1         6    1
      7          0         7    0
      7          1         7    1
```

```
Switch(qos)# show scheduler-mode
Port  Mode
----  --------
1     Strict
2     Strict
3     Strict


Switch(qos)# show scheduler-weight 1
Port  Queue  Weight
----  -----  ----------
1     0      17  (17%)
      1      17  (17%)
      2      17  (17%)
      3      17  (17%)
      4      17  (17%)
      5      17  (17%)


Switch(qos)# show storm
           Unicast             Broadcast             Unknown
Port  Mode      Rate       Mode      Rate       Mode      Rate
----  --------  ---------  --------  ---------  --------  ---------
1     Disabled   500 kbps  Disabled   500 kbps  Disabled   500 kbps
2     Disabled   500 kbps  Disabled   500 kbps  Disabled   500 kbps
3     Disabled   500 kbps  Disabled   500 kbps  Disabled   500 kbps
4     Disabled   500 kbps  Disabled   500 kbps  Disabled   500 kbps
```

```
Switch(qos)# show tag-remarking ?
  <cr>
Switch(qos)# show tag-remarking
Port  Mode        PCP  DEI
----  ----------  ---  ---
1     Classified  0    0
2     Classified  0    0
3     Classified  0    0


Switch(qos)# show wred
Queue  Mode      Min. Threshold  Max. DP 1  Max. DP 2  Max. DP 3
-----  --------  --------------  ---------  ---------  ---------
0      Disabled  0               1          5          10
1      Disabled  0               1          5          10
2      Disabled  0               1          5          10
3      Disabled  0               1          5          10
4      Disabled  0               1          5          10
5      Disabled  0               1          5          10
```

storm: The command lets you configure storm rate control

Syntax: **storm** broadcast/ unicast/ unknown <port-list> disable/ enable Kbps/…/ fps <1-10000>/ <100-10000000>

Parameter :

broadcast: Broadcast frame storm control

unicast: Unicast frame storm control

unknown: Unknown frame storm control

<port-list>: available value is from switch physical port density, format: 1,3-5

disable: Disable port storm control

enable: Enable port storm control

Kbps: Rate in kilo bits per second (Kbps)

Kfps: Rate in kilo frame per second (Kfps)

Mbps: Rate in mega bits per second (Mbps)

fps: Rate in frame per second (fps)

<1-10000>/ <100-10000000>: Rate

EXAMPLE:

```
Switch(qos)# storm broadcast 1 enable mbps 99
Switch(qos)# storm unicast 2 enable mbps 88
Switch(qos)# storm unknown 3 enable fps 777
Switch(qos)# show storm
           Unicast            Broadcast            Unknown
Port  Mode      Rate       Mode      Rate       Mode      Rate
----  --------  ---------  --------  ---------  --------  ---------
1     Disabled   500 kbps  Enabled     99 Mbps  Disabled   500 kbps
2     Enabled     88 Mbps  Disabled   500 kbps  Disabled   500 kbps
3     Disabled   500 kbps  Disabled   500 kbps  Enabled    777 fps
4     Disabled   500 kbps  Disabled   500 kbps  Disabled   500 kbps
5     Disabled   500 kbps  Disabled   500 kbps  Disabled   500 kbps
```

tag-remarking:

The command lets you do QoS egress port tag remarking

Syntax: **tag-remarking** dei <port-list> <0-1>

map <port-list> <class-list> <dpl-list> <0-7> <0-1>

mode <port-list> classified/ default/ mapped

pcp <port-list> <0-7>

Parameter : **dei**: Configure the default DEI. This value is used when port tag remarking mode is set to 'default'

<port-list>: available value is from switch physical port density, format: 1,3-5

<0-1>: Drop Eligible Indicator

map: Configure the port tag remarking map. This map is used when port tag remarking mode is set to 'mapped', and the purpose is to translate the classified QoS class (0-7) and DP level (0-1) to PCP and DEI

<class-list>: QoS class list, available value is from 0 to 7

<dpl-list>: Drop precedence level list, available value is from 0 to 1

<0-7>: Priority Code Point

<0-1>: Drop Eligible Indicator

mode: Configure the port tag remarking mode

classified: Use classified PCP/DEI values

default: Use default PCP/DEI values

mapped: Use mapped versions of QoS class and DP level

pcp: Configure the default PCP. This value is used when port tag remarking mode is set to 'default'

<0-7>: Priority Code Point

EXAMPLE:

```
Switch(qos)# tag-remarking dei 1 1
Switch(qos)# tag-remarking mode 2 mapped
Switch(qos)# tag-remarking pcp 3 7
Switch(qos)# show tag-remarking
Port  Mode        PCP  DEI
----  ----------  ---  ---
1     Classified  0    1
2     Mapped      0    0
3     Classified  7    0
4     Classified  0    0


Switch(qos)# tag-remarking map 2 7 1 7 1
```

wred:

The command lets you configure Weighted Random Early Detection

Syntax: **wred** <queue-list> disable/ enable <0-100> <0-100> <0-100> <0-100>

Parameter : **<queue-list>:** Queue list, available value is from 0 to 5

disable: Disable

enable: Enable

<0-100>: Minimum threshold

<0-100>: Maximum Drop Probability for DP level 1

<0-100>: Maximum Drop Probability for DP level 2

<0-100>: Maximum Drop Probability for DP level 3

EXAMPLE:

```
Switch(qos)# wred 5 enable 10 20 30 40
Switch(qos)# show wred
Queue  Mode      Min. Threshold  Max. DP 1  Max. DP 2  Max. DP 3
-----  --------  --------------  ---------  ---------  ---------
0      Disabled  0               1          5          10
1      Disabled  0               1          5          10
2      Disabled  0               1          5          10
3      Disabled  0               1          5          10
4      Disabled  0               1          5          10
5      Enabled   10              20         30         40
```

Chapter 37 Reboot Commands of CLI

Reboot

This section describes how to restart the switch for any maintenance needs. Any configuration files or scripts that you saved in the switch should still be available afterwards.

Table 36: Reboot Commands

Command	Function
reboot	Reboot the system

reboot: The command lets you reboot the system

Syntax: **Reboot** <cr>

Parameter : **<cr>** means press the Enter key.

EXAMPLE:

```
Switch# reboot
```

Chapter 38 SFlow Commands of CLI

SFlow

The sFlow Collector configuration for the switch can be monitored and modified here. Up to 1 Collector is supported. This page allows for configuring sFlow collector IP type, sFlow collector IP Address, Port Number, for each sFlow Collector

Table 37: SFlow Commands

Command	Function
collector	sFlow Collector Configuration
sampler	sFlow sampler Configuration
show	Show sFlow

collector:

The command lets you set sFlow Collector Configuration

Syntax: **collector** IPv4/ IPv6 <ip-address> <1-65535> <0-2147483647> <200-1500>

Parameter :

IPv4: IP type

IPv6: IP type

<ip-address>: IP address

<1-65535>: TCP/UDP port number. By default, the port number is 6343

<0-2147483647>: Set the receiver timeout for list of receiver ID (RID). Collector cannot collect samples unless receivertimeout

<200-1500>: Set the reciever datagram length for list of receiver ID (RID)

EXAMPLE:

```
Switch(sflow)# collector ipv4 192.168.100.100 6345 99 1500
Switch(sflow)# show
% Incomplete command
Switch(sflow)# show collector
             Configured       Current
             ---------------- ----------------
Collector Id  1                1
IP Type       IPv4             IPv4
IP Address    192.168.100.100  192.168.100.100
Port          6345             6345
Time Out      99               90 Timer is still alive!
Datagram Size 1500             1500
```


Publication date: Feb., 2012
Revision A1

sampler: The command lets you sFlow sampler Configuration

Syntax: **sampler** <port-list> ALL/ RX/ TX/ none <0-4095> <14-200> <0-3600>

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5

ALL: Sample on both RX and TX

RX: Sample on RX

TX: Sample on TX

none: Sampling is disabled

<0-4095>: If parameter sample_rate is 'N' then 1/N of packets is sampled

<14-200>: Configures the size of the header of the sampled frame to be copied to the Queue for further processing. The Max header size ranges from 14 to 200 bytes.

<0-3600>: Configures the polling interval for the counter sampling. The accepted value for Counter Polling Interval ranges from 0 to 3600 seconds. Default value is 0 seconds, which means polling is disabled.

EXAMPLE:

```
Switch(sflow)# sampler 2 aLL 400 199 3600
Switch(sflow)# show sampler
sFlow sFlow    Sampler  Sampling Max Hdr Counter Polling
Ports Instance Type     Rate     Size    Interval
----- -------- -------- -------- ------- ---------------
    1        1     None        0     128               0
    2        1      ALL      400     199            3600
    3        1     None        0     128               0
    4        1     None        0     128               0
```

show The command lets you show sFlow

Syntax: **show** collector/ sampler

Parameter : **collector:** Show sFlow collector

sampler: Show sFlow sampler

EXAMPLE:

```
Switch(sflow)# show collector
             Configured       Current
             ---------------- ----------------
Collector Id  1                1
IP Type       IPv4             IPv4
IP Address    0.0.0.0          0.0.0.0
Port          6343             6343
Time Out      0                0 Timer is still alive!
Datagram Size 1400             1400


Switch(sflow)# show sampler
sFlow sFlow    Sampler  Sampling Max Hdr Counter Polling
Ports Instance Type     Rate     Size    Interval
----- -------- -------- -------- ------- ---------------
    1        1     None        0     128               0
    2        1     None        0     128               0
    3        1     None        0     128               0
    4        1     None        0     128               0
```

Chapter 39 Single IP Commands of CLI

Single IP

Single IP Management (SIM), a simple and useful method to optimize network utilities and management, is designed to manage a group of switches as a single entity, called an SIM group. Implementing the SIM feature will have the following advantages for users:

- Simplify management of small workgroups or wiring closets while scaling networks to handle increased bandwidth demand.
- Reduce the number of IP addresses needed on the network.
- Virtual stacking structure - Eliminate any specialized cables for stacking and remove the distance barriers that typically limit topology options when using other stacking technology.

Table 38: Single IP Commands

Command	Function
connect	Connect to slave switch
group-name	Configure single ip group name
mode	Configure single ip mode
show	Show single ip information

connect: The command lets you connect to slave switch

Syntax: **connect** <1-16>

Parameter : **<1-16>:** Slave switch index

EXAMPLE:

```
Switch(sip)# connect 1
```

group-name: The command lets you configure single IP group name

Syntax: **group-name** disable/ enable

Parameter : **<WORD>:** Up to 64 characters describing group name

EXAMPLE:

```
Switch(sip)# group-name david
Switch(sip)# show config
Mode             : Disabled
Group Name       : david
```

mode: The command lets you configure single IP mode

Syntax: **mode** disable/ master/ slave

Parameter : **disable:** Disable single ip operation

master: Configure as master

slave: Configure as slave

EXAMPLE:

```
Switch(sip)# mode master
Switch(sip)# show c
Mode             : Master
Group Name       : david
```

show: The command lets you show single IP information

Syntax: **show** config/ info

Parameter : **config:** Show single ip configuration

info: Show single ip group information

EXAMPLE:

```
Switch(sip)# show config
Mode             : Disabled
Group Name       : VirtualStack


Switch(sip)# show info
Index  Model Name      MAC Address
-----  --------------  -----------------
```

Chapter 40 SMTP Commands of CLI

SMTP The function is used to set a Alarm trap when the switch alarms, then you can set the SMTP server to send you the alarm mail.

Table 39: SMTP Commands

Command	Function
delete	Delete command
level	Configure Severity level
mail-address	Configure email user name
return-path	Configure email sender
sender	Configure email sender
server	Configure email server
show	Show email configuration
username	Show DHCP snooping information

delete: The command lets you delete command

Syntax: **delete** mail-address <1-6>
return-path/ sender/ server/ username

Parameter : **mail-address:** Delete email address
<1-6>: Delete email address id
return-path: Delete return path
sender: Delete sender
server: Delete email server
username: Delete username and password

EXAMPLE:

```
Switch(smtp)# delete mail-address 2
Switch(smtp)# show
Mail Server     :
User Name       :
Password        :
Severity level  : Info
Sender          :
Return Path     :
Email Adress 1  :
Email Adress 2  :
Email Adress 3  :
Email Adress 4  :
Email Adress 5  :
Email Adress 6  :
```


Publication date: Feb., 2012
Revision A1

level: The command lets you configure Severity level

Syntax: **level** <0-7>

Parameter : **<0-7>:** Severity level <0> Emergency: system is unusable
<1> Alert: action must be taken immediately
<2> Critical: critical conditions
<3> Error: error conditions
<4> Warning: warning conditions
<5> Notice: normal but significant condition
<6> Informational: informational messages
<7> Debug: debug-level messages

EXAMPLE:

```
Switch(smtp)# level 7
Switch(smtp)# show
Mail Server     :
User Name       :
Password        :
Severity level  : Debug
Sender          :
Return Path     :
Email Adress 1  :
Email Adress 2  :
Email Adress 3  :
Email Adress 4  :
Email Adress 5  :
Email Adress 6  :
```

mail-address: The command lets you configure email user name

Syntax: **mail-address** <1-6> <mail-address>

Parameter : **<1-6>:** Email address index
<mail-address>: Up to 47 characters describing mail address

EXAMPLE:

```
Switch(smtp)# mail-address 6 david@tech.com.tw
Switch(smtp)# show
Mail Server     :
User Name       :
Password        :
Severity level  : Debug
Sender          :
Return Path     :
Email Adress 1  :
Email Adress 2  :
Email Adress 3  :
Email Adress 4  :
Email Adress 5  :
Email Adress 6  : david@tech.com.tw
```

return-path: The command lets you configure the address of email sender

Syntax: **return-path** <return-path>

Parameter : **<return-path>:** Up to 47 characters describing return path

EXAMPLE:

```
Switch(smtp)# return-path david@tech.com.tw
Switch(smtp)# show
Mail Server     :
User Name       :
Password        :
Severity level  : Debug
Sender          :
Return Path     : david@tech.com.tw
Email Adress 1  :
Email Adress 2  :
Email Adress 3  :
Email Adress 4  :
Email Adress 5  :
Email Adress 6  : david@tech.com.tw
```

sender: The command lets you configure email sender

Syntax: **sender** <sender>

Parameter : **<sender>:** Up to 47 characters describing sender

EXAMPLE:

```
Switch(smtp)# sender tech
Switch(smtp)# show
Mail Server     :
User Name       :
Password        :
Severity level  : Debug
Sender          : david
Return Path     : david@mail. tech.com.tw
Email Adress 1  :
Email Adress 2  :
Email Adress 3  :
Email Adress 4  :
Email Adress 5  :
Email Adress 6  : david@tech.com.tw
```

server: The command lets you configure email server

Syntax: **mode** server

Parameter : **<server>:** Up to 47 characters describing email server

EXAMPLE:

```
Switch(smtp)# server davidserver
Switch(smtp)# show
Mail Server     : davidserver
User Name       :
Password        :
Severity level  : Debug
Sender          : davidtech
Return Path     : david@mail.davidtech.com.tw
Email Adress 1  :
Email Adress 2  :
Email Adress 3  :
Email Adress 4  :
Email Adress 5  :
Email Adress 6  : jack@davidtech.com.tw
```

show: The command lets you show email configuration

Syntax: **show** <cr>

Parameter : **<cr>** means it without any parameter needs to type.

NOTE: When enable DHCP snooping mode operation, the request DHCP messages will be forwarded to trusted ports and only allowed reply packets from trusted ports.

EXAMPLE:

```
Switch(smtp)# show
Mail Server     :
User Name       :
Password        :
Severity level  : Info
Sender          :
Return Path     :
Email Adress 1  :
Email Adress 2  :
Email Adress 3  :
Email Adress 4  :
Email Adress 5  :
Email Adress 6  :
```

username: The command lets you configure email user name

Syntax: **mode** username password

Parameter : **<username>:** Up to 47 characters describing user name

<password>: Up to 47 characters describing password

EXAMPLE:

```
Switch(smtp)# username david 1111
Switch(smtp)# show
Mail Server     : davidserver
User Name       : david
Password        : ********
Severity level  : Debug
Sender          : davidtech
Return Path     : david@mail.davidtech.com.tw
Email Adress 1  :
Email Adress 2  :
Email Adress 3  :
Email Adress 4  :
Email Adress 5  :
Email Adress 6  : rose@davidtech.com.tw
```

Chapter 41 SNMP Commands of CLI

SNMP

Any Network Management System (NMS) running the Simple Network Management Protocol (SNMP) can manage the Managed devices equipped with SNMP agent, provided that the Management Information Base (MIB) is installed correctly on the managed devices. The SNMP is a protocol that is used to govern the transfer of information between SNMP manager and agent and traverses the Object Identity (OID) of the management Information Base (MIB), described in the form of SMI syntax. SNMP agent is running on the switch to response the request issued by SNMP manager.

Basically, it is passive except when issuing the trap information. The switch supports a switch to turn on or off the SNMP agent. If you set the field SNMP "Enable", SNMP agent will be started up. All supported MIB OIDs, including RMON MIB, can be accessed via SNMP manager. If the field SNMP is set "Disable", SNMP agent will be de-activated, and the related Community Name, Trap Host IP Address, Trap and all MIB counters will be ignored.

Table 40: SNMP Commands

Command	Function
access	Configure SNMP access
community	Configure SNMP community
delete	Delete command
engine-id	Set SNMP Engine ID
getcommunity	Configure SNMP Get Community
group	Configure SNMP groups
mode	Enable/Disable SNMP mode
setcommunity	Configure SNMP Set Community
show	Show SNMP command
trap	Configure SNMP trap
user	Configure SNMP users
view	Configure SNMP views

access: The command lets you configure SNMP access

Syntax: **access** any/ usm AuthNoPriv/ AuthPriv/ NoAuthNoPriv <WORD> <WORD>

access v1/ v2c AuthNoPriv <WORD> <WORD>

Publication date: Feb., 2012
Revision A1

Parameter : **<WORD>**: group name: max 32 chars

any: Security Model

usm: Security Model

AuthNoPriv: Security Level. If security_model is not usm, the security_level value must be NoAuthNoPriv

AuthPriv: Security Level. If security_model is not usm, the security_level value must be NoAuthNoPriv

NoAuthNoPriv: Security Level. If security_model is not usm, the security_level value must be NoAuthNoPriv

<WORD>: read_view_name: The scope for a specified instance can read, None is reserved for Empty.

<WORD>: write_view_name: The scope for a specified instance can write, None is reserved for Empty.

v1: Security Model

v2c: Security Model

AuthNoPriv: Security Level. If security_model is not usm, the security_level value must be NoAuthNoPriv

EXAMPLE:

```
Switch(snmp)# access g usm noAuthNoPriv v v
Switch(snmp)# show access

SNMPv3 Accesses Table:
Idx    Group Name    Model SecurityLevel   Read View Name  Write View Name
--- ---------------- ----- -------------- ---------------- ----------------
1   g               usm   NoAuth, NoPriv v               v
```

comminity: The command lets you configure SNMP community

Syntax: **community** <WORD> <WORD> <ip-address> <ip-mask>

Parameter : **<WORD>**: community: max 32 chars<60-1400> Size of ICMP echo packet

<WORD>: user name: max 32 chars

<ip-address>: SNMP access source ip

<ip-mask>: SNMP access source address mask

EXAMPLE:

```
witch(snmp)# community david pm 192.168.6.127 255.255.255.0
Switch(snmp)# show community

SNMP Community Table:
Idx Community       UserName        Source IP       Source Mask
--- --------------- --------------- --------------- ---------------
1   david           pm              192.168.6.127   255.255.255.0

Number of entries: 1
```

delete: The command lets you delete command

Syntax: **delete** access/ community/ group/ trap/ user/ view <1-14>/<1-4>/<1-6>/<1-10>/<1-48>

Parameter : **access:** Delete snmpv3 access entry

<1-14>: table index

community: Delete community entry

<1-4>: table index

group: Delete snmpv3 groups entry

<1-14>: table index

trap: Delete trap entry

<1-6>: table index

user: Delete snmpv3 users entry

<1-10>: table index

view: Delete snmpv3 views entry

<1-48>: table index

EXAMPLE:

```
Switch(snmp)# delete access 14
```

engine-id: The command lets you set SNMP Engine ID

Syntax: **engine-id** <HEX>

Parameter : **<HEX>**: the format may not be all zeros or all 'ff'H,and is restricted to 5 - 32 octet string

EXAMPLE:

```
Switch(snmp)# engine-id ffffffffffffffff
```

getcommunity: The command lets you configure SNMP Get Community

Syntax: **getcommunity** <WORD>

Parameter : **<WORD>:** community: max 32 chars, default : public

EXAMPLE:

```
Switch(snmp)# getcommunity rose
Switch(snmp)# show snmp

SNMP Configuration
--------------------------------
Get Community      : rose
Set Community Mode : Enable
Set Community      : jack
```

group: The command lets you configure SNMP groups

Syntax: **group** <WORD> usm/ v1/ v2c

Parameter : **<WORD>**:user name: max 32 chars

usm: Security Model

v1: Security Model

v2c: Security Model

EXAMPLE:

```
Switch(snmp)# group pm v1 ccc
Switch(snmp)# show group

SNMPv3 Groups Table:
Idx Model Security Name                    Group Name
--- ----- --------------------------------- ---------------------------------
1   v1    pm                               ccc

Number of entries: 1


Switch(snmp)# group pm v2c aaa
Switch(snmp)# show group

SNMPv3 Groups Table:
Idx Model Security Name                    Group Name
--- ----- --------------------------------- ---------------------------------
1   v2c   pm                               aaa
```

mode: The command lets you Enable/Disable SNMP mode

Syntax: **mode** disable/ enable

Parameter : **disable:** Disable SNMP mode

enable: Enable SNMP mode

EXAMPLE:

```
Switch(snmp)# mode enable
Switch(snmp)# show mode

SNMPv3 State Show
SNMP State          : Enabled
SNMPv3 Engine ID    : 80001455030040c7232600
```

setcommunity: The command lets you configure SNMP Set Community

Syntax: **setcommunity** disable/ enable

Parameter : **disable:** Disable SNMP Set Community

enable: Enable SNMP Set Community

<WORD>: community: max 32 chars, default : private

EXAMPLE:

```
Switch(snmp)# setcommunity enable jack
Switch(snmp)# show snmp

SNMP Configuration
--------------------------------
Get Community      : eee
Set Community Mode : Enable
Set Community      : jack
```

show: The command lets you show SNMP command

Syntax: **show** access/ community/ group/ mode/ snmp/ trap/ user/ view

Parameter : **access**: Show snmpv3 access entry

community: Show snmpv3 community entry

group: Show snmpv3 groups entry

mode: Show snmp configuration

snmp: Show snmp community configuration

trap: Show snmp trap entry

user: Show snmpv3 users entry

view: Show snmpv3 views entry

EXAMPLE:

```
Switch(snmp)# show access

SNMPv3 Accesses Table:
Idx    Group Name    Model SecurityLevel   Read View Name  Write View Name
--- ---------------- ----- -------------- ---------------- ----------------

Number of entries: 0

Switch(snmp)# show community

SNMP Community Table:
Idx Community       UserName         Source IP       Source Mask
--- --------------- ---------------- --------------- ---------------
1   david           pm              192.168.6.127   255.255.255.0

Number of entries: 1
```

trap: The command lets you configure SNMP trap

Syntax: **trap** <1-6> v2/ v3 ipv4/ ipv6 <ip-address> <1-65535> <0-7>

Parameter : **<1-6>**: trap index : 1 - 6

v2: version

v3: version

ipv4: Trap host IP type

ipv6: Trap host IP type

<ip-address>: Trap host IPv4 address

<1-65535>: trap port

<0-7> Severity level
<0> Emergency: system is unusable
<1> Alert: action must be taken immediately
<2> Critical: critical conditions
<3> Error: error conditions
<4> Warning: warning conditions
<5> Notice: normal but significant condition
<6> Informational: informational messages
<7> Debug: debug-level messages

EXAMPLE:

```
Switch(snmp)# trap 2 v2 ipv4 192.168.6.127 65535 7 aaa
Switch(snmp)# show trap
SNMPv3 Trap Host Configuration:

                                Community               Severity    Auth.     Priv.
No Ver Server IP       Port Security Name           Level     Protocol  Protocol
-- --- --------------- ---- ----------------------- --------- --------- --------
1
2  v2c 192.168.6.127   65535 aaa                    Debug
3
4
5
6
```

user: The command lets you configure SNMP users

Syntax: **user** <WORD> AuthNoPriv/ AuthPriv/ NoAuthNoPriv MD5/ SHA <WORD>

Parameter : **<WORD>**: user name: max 32 chars

AuthNoPriv: Security_Level

AuthPriv: Security_Level

NoAuthNoPriv: Security_Level

MD5: Authentication Protocol

SHA: Authentication Protocol

<WORD>: MD5 Authentication Password is restricted to 8 - 32

EXAMPLE:

```
Switch(snmp)# user wade authnoPriv md5 12345678
Switch(snmp)# show user

SNMPv3 Users Table:
Index User Name                       Security Level Auth Priv
----- ------------------------------- -------------- ---- ----
1     wade                            AuthNoPriv     MD5  None

Number of entries: 1
```

view: The command lets you configure SNMP views

Syntax: **view** <WORD> excluded/ included <WORD>

Parameter : <WORD>: view name: max 32 chars

excluded: view_type

included: view_type

<WORD>: oid_subtree: The OID defining the root of the subtree.

EXAMPLE:

```
Switch(snmp)# view viewdavid included .1.3.6.1.2
Switch(snmp)# show view

SNMPv3 Views Table:
Idx View Name                        View Type OID Subtree
--- -------------------------------- --------- --------------------------------
1   viewdavid                        included  .1.3.6.1.2
```

Chapter 42 SSH Commands of CLI

SSH

This section shows you how to use SSH (Secure SHell) to securely access the Switch. SSH is a secure communication protocol that combines authentication and data encryption to provide secure encrypted communication.

Table 41: SSH Commands

Command	Function
mode	Configure the SSH mode
show	Show SSH configuration

mode: The command lets you configure the SSH mode

Syntax: **mode** disable/ enable

Parameter : **disable:** Disable SSH mode operation

enable: Enable SSH mode operation

EXAMPLE:

```
Switch(ssh)# mode enable
Switch(ssh)# show
SSH Mode : Enabled
```

show: The command lets you show SSH configuration

Syntax: **show** <cr>

Parameter : **<cr>** means press the Enter key.

EXAMPLE:

```
Switch(ssh)# show
SSH Mode : Enabled
```


Publication date: Feb., 2012
Revision A1

Chapter 43 STP Commands of CLI

STP

The Spanning Tree Protocol (STP) can be used to detect and disable network loops, and to provide backup links between switches, bridges, or routers. This allows the switch to interact with other bridging devices (that is, an STP-compliant switch, bridge or router) in your network to ensure that only one route exists between any two stations on the network, and provide backup links which automatically take over when a primary link goes down.

STP - STP uses a distributed algorithm to select a bridging device (STP-compliant switch, bridge, or router) that serves as the root of the spanning tree network. It selects a root port on each bridging device (except for the root device) that incurs the lowest path cost when forwarding a packet from that device to the root device. Then it selects a designated bridging device from each LAN that incurs the lowest path cost when forwarding a packet from that LAN to the root device. All ports connected to designated bridging devices are assigned as designated ports. After determining the lowest cost spanning tree, it enables all root ports and designated ports, and disables all other ports. Network packets are therefore only forwarded between root ports and designated ports, eliminating any possible network loops.

Once a stable network topology has been established, all bridges listen for Hello BPDUs (Bridge Protocol Data Units) transmitted from the Root Bridge. If a bridge does not get a Hello BPDU after a predefined interval (Maximum Age), the bridge assumes that the link to the Root Bridge is down. This bridge will then initiate negotiations with other bridges to reconfigure the network to reestablish a valid network topology.

Table 42: STP Commands

Command	Function
CName	Set MSTP Configuration name
FwdDelay	Set FwdDelay
MaxAge	Set Maxage
MaxHops	Set MaxHops
Statistics	Clear STP port statistics
Txhold	Set TxHold
Version	Set force-version
bpduFilter	Set edge port BPDU Filtering
bpduGuard	Set edge port BPDU Guard
migrate-check	Set the STP mCheck (Migration Check) variable for ports

msti-vlan	Map Vlan ID(s) to an MSTI
p-AutoEdge	Set the STP autoEdge port parameter
p-bpduGuard	Set the bpduGuard port parameter
p-cost	Set the STP port instance path cost
p-edge	Set the STP adminEdge port parameter
p-mode	Set the STP enabling for a port
p-p2p	Set the STP point2point port parameter
p-priority	Set the STP port instance priority
priority	Set the bridge instance priority
r-role	Set the MSTP restrictedRole port parameter
r-tcn	Set the MSTP restrictedTcn port parameter
recovery	Set edge port error recovery timeout
show	Show Region config, MSTI vlan mapping, instance parameters and port parameters

CName: The command lets you Set MSTP Configuration name

Syntax: **CName** <WORD> <0-65535>

Parameter : <WORD>: **A text string up to 32 characters long**

<0-65535>: **MSTP revision-level(0~65535)**

EXAMPLE:

```
Switch(stp)# cName david 65535
Switch(stp)# show cName
Configuration name: david
Configuration rev.: 65535
```

FwdDelay: The command lets you Set FwdDelay

Syntax: **FwdDelay** <4-30>

Parameter : **<4-30>:** MSTP forward delay (4-30, and max_age <= (forward_delay -1)*2))

EXAMPLE:

```
Switch(stp)# fwdDelay 30
witch(stp)# show instance
STP Configuration
Protocol Version: MSTP
Max Age         : 20
Forward Delay   : 30
Tx Hold Count   : 6
Max Hop Count   : 20
BPDU Filtering  : Disabled
BPDU Guard      : Disabled
Error Recovery  : 0 seconds
Error Recovery  : Disabled
```

MaxAge: The command lets you Set Maxage

Syntax: **maxage** <6-40>

Parameter : **<6-40>:** STP maximum age time (6-40, and max_age <= (forward_delay-1)*2)

EXAMPLE:

```
Tx Hold Count   : 6
Max Hop Count   : 20
BPDU Filtering  : Disabled
BPDU Guard      : Disabled
Error Recovery  : 0 seconds
Error Recovery  : Disabled
```

MaxHops: The command lets you Set MaxHops

Syntax: **maxhops** <6-40>

Parameter : **<6-40>**: STP BPDU MaxHops (6-40))

EXAMPLE:

```
Switch(stp)# maxhops 38
Switch(stp)# show instance
STP Configuration
Protocol Version: MSTP
Max Age         : 39
Forward Delay   : 30
Tx Hold Count   : 6
Max Hop Count   : 38
BPDU Filtering  : Disabled
BPDU Guard      : Disabled
Error Recovery  : 0 seconds
Error Recovery  : Disabled
```

Statistics: The command lets you Clear STP port statistics

Syntax: **statistics** clear

Parameter : **clear:** Clear the selected port statistics

EXAMPLE:

```
Switch(stp)# statistics clear
Port      Rx MSTP   Tx MSTP   Rx RSTP   Tx RSTP   Rx STP   Tx STP   Rx TCN   T
x TCN   Rx Ill.  Rx Unk.
--------  --------  --------  --------  --------  -------  -------  -------  -
------  -------  -------
```

TxHold: The command lets you Set TxHold

Syntax: **txhold** <1-10>

Parameter : **<1-10>:** STP Transmit Hold Count (1-10)

EXAMPLE:

```
Switch(stp)# txhold 9
Switch(stp)# show instance
STP Configuration
Protocol Version: MSTP
Max Age         : 39
Forward Delay   : 30
Tx Hold Count   : 9
Max Hop Count   : 38
BPDU Filtering  : Disabled
BPDU Guard      : Disabled
Error Recovery  : 0 seconds
Error Recovery  : Disabled
```

Version: The command lets you Set force-version

Syntax: **version** mstp/ rstp/ stp

Parameter : **mstp:** Multiple Spanning Tree Protocol

rstp: Rapid Spanning Tree Protocol

stp: Spanning Tree Protocol

EXAMPLE:

```
Switch(stp)# version stp
Switch(stp)# show instance
STP Configuration
Protocol Version: Compatible (STP)
Max Age         : 39
Forward Delay   : 30
Tx Hold Count   : 9
Max Hop Count   : 38
BPDU Filtering  : Disabled
BPDU Guard      : Disabled
Error Recovery  : 0 seconds
Error Recovery  : Disabled
```

bpduFilter:

The command lets you Set edge port BPDU Filtering on the switch

Syntax: **bpdufilter** disable/ enable

Parameter : **disable:** Disable BPDU Filtering for Edge ports

enable: Enable BPDU Filtering for Edge ports

EXAMPLE:

```
Switch(stp)# bpdufilter enable
Switch(stp)# show instance
STP Configuration
Protocol Version: Compatible (STP)
Max Age         : 39
Forward Delay   : 30
Tx Hold Count   : 9
Max Hop Count   : 38
BPDU Filtering  : Enabled
BPDU Guard      : Disabled
Error Recovery  : 0 seconds
Error Recovery  : Disabled
```

bpduGuard:

The command lets you Set edge port BPDU Guard

Syntax: **bpduguard** disable/ enable

Parameter : **disable:** Disable BPDU Guard for Edge ports

enable: Enable BPDU Guard for Edge ports

EXAMPLE:

```
Switch(stp)# bpduguard enable
Switch(stp)# show instance
STP Configuration
Protocol Version: Compatible (STP)
Max Age         : 39
Forward Delay   : 30
Tx Hold Count   : 9
Max Hop Count   : 38
BPDU Filtering  : Enabled
BPDU Guard      : Enabled
Error Recovery  : 0 seconds
Error Recovery  : Disabled
```

migrate-check:

The command lets you Set the STP mCheck (Migration Check) variable for ports

Syntax: **migrate-check** <port-list>

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5

EXAMPLE:

```
Switch(stp)# migrate-check 1
```

msti-vlan:

The command lets you Map Vlan ID(s) to an MSTI

Syntax: **msti-vlan** add/ del <0-7> <1-4094>

Parameter : **add**: Add a VLAN to a MSTI

del: clear MSTP MSTI VLAN mapping configuration

<0-7>: STP bridge instance no (0-7, CIST=0, MSTI1=1, ...)

<1-4094>: available from 1 to 4094

EXAMPLE:

```
Switch(stp)# msti-vlan add 1 4094
Switch(stp)# show msti-vlan
MSTI  VLANs mapped to MSTI
----  --------------------
MSTI1  4094
MSTI2  No VLANs mapped
MSTI3  No VLANs mapped
MSTI4  No VLANs mapped
MSTI5  No VLANs mapped
MSTI6  No VLANs mapped
MSTI7  No VLANs mapped
```

p-AutoEdge: The command lets you Set the STP autoEdge port parameter

Syntax: **p-autoEdge** aggregations/<port-list> disable/ enable

Parameter : **aggregations:** available value is for aggregated port

<port-list>: available value is from switch physic port density, format: 1,3-5

disable: disable: Disable MSTP autoEdges

enable: enable : Enable MSTP autoEdge

EXAMPLE:

```
Switch(stp)# p-autoEdge aggregations enable
Switch(stp)# show pconf

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ----------------- ----------------- ---------------------
Aggr  Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Enabled

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ----------------- ----------------- ---------------------
1     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
2     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
3     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto


Switch(stp)# p-autoEdge 1 disable
Switch(stp)# show pconf

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ----------------- ----------------- ---------------------
Aggr  Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Enabled

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ----------------- ----------------- ---------------------
1     Disabled  Disabled  Disabled  Disabled  Disabled  Disabled  Auto
2     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
3     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
```

p-bpduGuard:

The command lets you Set the bpduGuard port parameter

Syntax: **p-bpduGuard** aggregations/<port-list> disable/ enable

Parameter : **aggregations:** available value is for aggregated port

<port-list>: available value is from switch physic port density, format: 1,3-5

disable: disable: Disable port BPDU Guard

enable: enable : Enable port BPDU Guard

EXAMPLE:

```
witch(stp)# p-bpduGuard aggregations enable
Switch(stp)# show pconf

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ----------------- ----------------- ---------------------
Aggr  Disabled  Disabled  Disabled   Disabled  Disabled  Enabled   Enabled

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ----------------- ----------------- ---------------------
1     Disabled  Disabled  Disabled   Disabled  Disabled  Disabled  Auto
2     Disabled  Disabled  Disabled   Disabled  Disabled  Disabled  Auto
3     Disabled  Disabled  Disabled   Disabled  Disabled  Disabled  Auto


Switch(stp)# p-bpduGuard 1 enable
Switch(stp)# show pconf
Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ----------------- ----------------- ---------------------
Aggr  Disabled  Disabled  Enabled   Disabled  Disabled  Enabled   Enabled

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ----------------- ----------------- ---------------------
1     Disabled  Disabled  Disabled  Disabled  Disabled  Enabled   Auto
2     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
3     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
```

p-cost:

The command lets you Set the STP port instance path cost

Syntax: **p-cost** <0-7> aggregations/<port-list> <0-200000000>

Parameter : **<0-7>:** STP bridge instance no (0-7, CIST=0, MSTI1=1, ...)

aggregations: available value is for aggregated port

<port-list>: available value is from switch physic port density, format: 1,3-5

<0-200000000>: STP port path cost (1-200000000) or The value zero means auto status

EXAMPLE:

```
Switch(stp)# p-cost 0 aggregations 2000000
Switch(stp)# show p-config 0

MSTI  Port  Path Cost   Priority
----  ----  ----------  --------
CIST  Aggr  2000000     128

MSTI  Port  Path Cost   Priority
----  ----  ----------  --------
CIST  1     Auto        128
CIST  2     Auto        128
CIST  3     Auto        128


Switch(stp)# p-cost 1 3 9999
Switch(stp)# show p-config 1

MSTI  Port  Path Cost   Priority
----  ----  ----------  --------
MSTI1  Aggr  Auto        128

MSTI  Port  Path Cost   Priority
----  ----  ----------  --------
MSTI1  1     Auto        128
MSTI1  2     Auto        128
MSTI1  3     9999        128
```

p-edge: The command lets you Set the STP adminEdge port parameter

Syntax: **p-edge** aggregations/<port-list> disable/ enable

Parameter : **aggregations:** available value is for aggregated port

<port-list>: available value is from switch physical port density, format: 1,3-5

disable: disable: Disable MSTP protocol

enable: enable : Enable MSTP protocol

EXAMPLE:

```
Switch(stp)# p-edge aggregations enable
Switch(stp)# show pconf

Port  Mode      AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  --------  ----------------  ----------------  ----------------------
Aggr  Disabled  Enabled   Enabled   Disabled  Disabled  Enabled   Enabled

Port  Mode      AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  --------  ----------------  ----------------  ----------------------
1     Disabled  Disabled  Disabled  Disabled  Disabled  Enabled   Auto
2     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
```

p-mode: The command lets you Set the STP enabling for a port

Syntax: **p-mode** aggregations/<port-list> disable/ enable

Parameter : **aggregations:** available value is for aggregated port

<port-list>: available value is from switch physic port density, format: 1,3-5
disable: disable: Disable MSTP protocol

enable: enable : Enable MSTP protoc

EXAMPLE:

```
Switch(stp)# p-mode aggregations enable
Switch(stp)# show pconf

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ----------------- ----------------- ----------------------
Aggr  Enabled   Disabled  Enabled   Disabled  Disabled  Enabled   Enabled

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ----------------- ----------------- ----------------------
1     Disabled  Disabled  Disabled  Disabled  Disabled  Enabled   Auto
2     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
```

p-p2p: The command lets you Set the STP point2point port

Syntax: **p-p2p** aggregations/<port-list> auto/ disable/ enable

Parameter : **aggregations:** available value is for aggregated port

<port-list>: available value is from switch physical port density, format: 1,3-5
auto: auto: Automatic MSTP point2point detection
disable: disable: Disable MSTP point2point

enable: enable : Enable MSTP point2point

EXAMPLE:

```
Switch(stp)# p-p2p aggregations auto
Switch(stp)# show pconf

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ----------------- ----------------- ---------------------
Aggr  Enabled   Disabled  Enabled   Disabled  Disabled  Enabled   Auto

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ----------------- ----------------- ---------------------
1     Disabled  Disabled  Disabled  Disabled  Disabled  Enabled   Auto
2     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto


Switch(stp)# p-p2p 2 disable
Switch(stp)# show pconf

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ----------------- ----------------- ---------------------
Aggr  Enabled   Disabled  Enabled   Disabled  Disabled  Enabled   Auto

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ----------------- ----------------- ---------------------
1     Disabled  Disabled  Disabled  Disabled  Disabled  Enabled   Auto
2     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Disabled
3     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
```

p-priority: The command lets you Set the STP port instance priority

Syntax: **p-priority** <0-7> aggregations/<port-list> <0-240>

Parameter : **<0-7>:** STP bridge instance no (0-7, CIST=0, MSTI1=1, ...)

aggregations: available value is for aggregated port

<port-list>: available value is from switch physic port density, format: 1,3-5

<0-240>: STP bridge priority (0/16/32/48/.../224/240)

EXAMPLE:

```
Switch(stp)# p-priority 3 aggregations 240
Switch(stp)# show p-config 3

MSTI  Port  Path Cost   Priority
----  ----  ----------  --------
MSTI3  Aggr  Auto        240

MSTI  Port  Path Cost   Priority
----  ----  ----------  --------
MSTI3  1     Auto        128
MSTI3  2     Auto        128


Switch(stp)# p-priority 1 2 224
Switch(stp)# show p-config 1

MSTI  Port  Path Cost   Priority
----  ----  ----------  --------
MSTI1  Aggr  Auto        128

MSTI  Port  Path Cost   Priority
----  ----  ----------  --------
MSTI1  1     Auto        128
MSTI1  2     Auto        224
```

priority: The command lets you Set the bridge instance priority

Syntax: **priority** <0-7> <0-240>

Parameter : **<0-7>:** STP bridge instance no (0-7, CIST=0, MSTI1=1, ...)

<0-240>: STP bridge priority (0/4096/8192/12288/.../57344/61440)

EXAMPLE:

```
Switch(stp)# priority 0 61440
Switch(stp)# show priority
MSTI#  Bridge Priority

-----  ----------------
CIST   61440
```

r-role: The command lets you Set the MSTP restrictedRole port parameter

Syntax: **r-role** aggregations/<port-list> disable/ enable

Parameter : **aggregations:** available value is for aggregated port

<port-list>: available value is from switch physic port density, format: 1,3-5

disable: Disable MSTP restricted role

enable: Enable MSTP restricted role

EXAMPLE:

```
Switch(stp)# r-role aggregations enable
Switch(stp)# show pconf

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ----------------- ----------------- ---------------------
Aggr  Enabled   Disabled  Enabled   Enabled   Disabled  Enabled   Auto

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ----------------- ----------------- ---------------------
1     Disabled  Disabled  Disabled  Disabled  Disabled  Enabled   Auto
2     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Disabled
3     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto


Switch(stp)# r-role 2 enable
Switch(stp)# show pconf

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ----------------- ----------------- ---------------------
Aggr  Enabled   Disabled  Enabled   Enabled   Disabled  Enabled   Auto

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ----------------- ----------------- ---------------------
1     Disabled  Disabled  Disabled  Disabled  Disabled  Enabled   Auto
2     Disabled  Disabled  Enabled   Enabled   Disabled  Disabled  Disabled
```

r-tcn:

The command lets you Set the MSTP restrictedTcn port parameter

Syntax: **r-tcn** aggregations/<port-list> disable/ enable

Parameter : **aggregations:** available value is for aggregated port

<port-list>: available value is from switch physic port density, format: 1,3-5

disable: Disable MSTP restricted TCN

enable: Enable MSTP restricted TCN

EXAMPLE:

```
Switch(stp)# r-tcn aggregations enable
Switch(stp)# show pconf

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ----------------- ----------------- ---------------------
Aggr  Enabled   Disabled  Enabled   Enabled   Enabled   Enabled   Auto

Port  Mode     AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  -------- ----------------- ----------------- ---------------------
1     Disabled  Disabled  Disabled  Disabled  Disabled  Enabled   Auto
2     Disabled  Disabled  Enabled   Enabled   Disabled  Disabled  Disabled
```

recovery:

The command lets you Set edge port error recovery timeout

Syntax: **recovery** <30-86400>

Parameter : **<30-86400>:** Time before error-disabled ports are reenabled (30-86400 seconds, 0 disables)

EXAMPLE:

```
Switch(stp)# recovery 86400
Switch(stp)# show instance
STP Configuration
Protocol Version: Compatible (STP)
Max Age         : 39
Forward Delay   : 30
Tx Hold Count   : 9
Max Hop Count   : 38
BPDU Filtering  : Enabled
BPDU Guard      : Enabled
Error Recovery  : 86400 seconds
Error Recovery  : Disabled
```

Show:

The command lets you Show Region config, MSTI vlan mapping, instance parameters, and port parameters

Syntax: **show** CName/ Statistics/ instance/ msti-vlan/ msti-vlan / pconf

show Status/ p-config <0-7>

Parameter : **CName:** Show MSTP Configuration name

Statistics: Show STP port statistics

Status: Show STP Bridge status

<0-7>: STP bridge instance no (0-7, CIST=0, MSTI1=1, ...)

instance: Show instance status

msti-vlan: Show MSTP MSTI VLAN mapping configuration

p-config: Show the STP port instance configuration

<0-7>: STP bridge instance no (0-7, CIST=0, MSTI1=1, ...)

pconf: Show STP Port configuration

priority: show the bridge instance priority

EXAMPLE:

```
Switch(stp)# show cName
Configuration name: 00-40-c7-23-26-00
Configuration rev.: 0


Switch(stp)# show instance
STP Configuration
Protocol Version: MSTP
Max Age         : 20
Forward Delay   : 15
Tx Hold Count   : 6
Max Hop Count   : 20
BPDU Filtering  : Disabled
BPDU Guard      : Disabled
Error Recovery  : 0 seconds
Error Recovery  : Disabled


Switch(stp)# show pconf

Port  Mode      AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  --------  ----------------  ----------------  ----------------------
Aggr  Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Enabled

Port  Mode      AdminEdge AutoEdge  restrRole restrTcn  bpduGuard Point2point
----  --------  ----------------  ----------------  ----------------------
1     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
2     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
3     Disabled  Disabled  Enabled   Disabled  Disabled  Disabled  Auto
```

Chapter 44 Syslog Commands of CLI

Syslog

The Syslog is a standard for logging program messages. It allows separation of the software that generates messages from the system that stores them and the software that reports and analyzes them. It can be used as well to generalize informational, analysis, and debugging messages. It is supported by a wide variety of devices and receivers across multiple platforms.

Table 43: Syslog Commands

Command	Function
clear	Clear syslog entry
level	Configure syslog level
mode	Configure syslog mode
server	Configure syslog server IP address
show	Show syslog information

clear: The command lets you Clear syslog entry

Syntax: **clear** <cr>

Parameter : **<cr>** means press the Enter key.

EXAMPLE:

Publication date: Feb., 2012
Revision A1

```
Switch(syslog)# clear
Switch(syslog)# show log
<0> Emergency: 0
<1> Alert    : 0
<2> Critical : 0
<3> Error    : 0
<4> Warning  : 0
<5> Notice   : 0
<6> Info     : 0
<7> Debug    : 0
    All      : 0

ID   Level     Time                Message
---- --------- ------------------- ---------------------------------------
<none>
```

level: The command lets you Configure syslog level

Syntax: **level** <0-7>

Parameter : **<0-7>:** Severity level
- **<0>** Emergency: system is unusable
- **<1>** Alert: action must be taken immediately
- **<2>** Critical: critical conditions
- **<3>** Error: error conditions
- **<4>** Warning: warning conditions
- **<5>** Notice: normal but significant condition
- **<6>** Informational: informational messages
- **<7>** Debug: debug-level messages

EXAMPLE:

```
Switch(syslog)# level 7
Switch(syslog)# show config
Server Mode      : Disabled
Server Address 1 :
Server Address 2 :
Syslog Level     : Debug
```

mode: The command lets you Configure syslog mode

Syntax: **mode** disable/ enable

Parameter : **disable:** Disable syslog mode

enable: Enable syslog mode

EXAMPLE:

```
Switch(syslog)# mode enable
Switch(syslog)# show config
Server Mode      : Enabled
Server Address 1 :
Server Address 2 :
Syslog Level     : Debug
```

server: The command lets you Configure syslog server IP address

Syntax: **server** <1-2> <ip-hostname>

Parameter : **<1-2>:** Syslog Server No.

<ip-hostname>: Syslog server IP address or host name

EXAMPLE:

```
Switch(syslog)# server 2 192.168.6.1
Switch(syslog)# show config
Server Mode      : Enabled
Server Address 1 :
Server Address 2 : 192.168.6.1
Syslog Level     : Debug
```

show: The command lets you Show syslog information

Syntax: **show** config

show detail-log <log-id>

show log <0-7>

Parameter : **config:** Show syslog configuration

detail-log: Show detailed syslog information

<log-id>: Log ID

log: Show syslog entry

<0-7> : Show syslog entry that match the level

EXAMPLE:

```
witch(syslog)# show config
Server Mode      : Disabled
Server Address 1 :
Server Address 2 :
Syslog Level     : Info


Switch(syslog)# show detail-log 2
ID     : 2
Level  : Warning
Time   : 2011-01-01 01:00:27
Message:

Link up on port 2


Switch(syslog)# show log 2
<0> Emergency: 0
<1> Alert    : 0
<2> Critical : 0
<3> Error    : 0
<4> Warning  : 8
<5> Notice   : 0
<6> Info     : 12
<7> Debug    : 0
    All      : 20

ID   Level     Time                Message
---- --------- ------------------- ---------------------------------------
<none>
```

Chapter 45 System Commands of CLI

System

After you login, the switch shows you the system information. This page is default and tells you the basic information of the system, including “Model Name”, “System Description”, “Contact”, “Device Name”, “System Up Time”, “BIOS Version”, “Firmware Version”, “Hardware-Mechanical Version”, “Serial Number”, “Host IP Address”, “Host Mac Address”, “Device Port”, “RAM Size” , “Flash Size”. With this information, you will know the software version used, MAC address, serial number, how many ports are good and so on. This is helpful while malfunctioning.

Table 44: System Commands

Command	Function
contact	Configure system contact
location	Configure system location
name	Configure device name
show	Show system information

contact: The command lets you Configure system contact

Syntax: **contact** <LINE>

Parameter : **<LINE>:** Up to 255 characters describing system contact information

EXAMPLE:

```
Switch(system)# contact david +886123456789
Switch(system)# show
Model Name                    : GEPoEL2-ESW26
System Description            : 24-Port 10/100/1000Base-T + 2 (100/1G) SFP PoE+
L2 Plus Managed Switch
Location                      :
Contact                       : david +886123456789
Device Name                   : GEPoEL2-ESW26
System Uptime                 : 3d 01:46:45
Current Time                  : 2011-01-04 02:46:45
BIOS Version                  : v1.00
Firmware Version              : v1.28
Hardware-Mechanical Version   : v1.00-v1.00
Series Number                 : 010199887766
Host IP Address               : 192.168.6.127
Subnet Mask                   : 255.255.255.0
Gateway IP Address            : 0.0.0.0
Host MAC Address              : 00-40-c7-23-26-00
Console Baudrate              : 115200
RAM Size                      : 64
Flash Size                    : 16
CPU Load (100ms, 1s, 10s)     : 0%, 18%, 16%
Bridge FDB Size               : 8192 MAC addresses
Transmit Queue                : 8 queues per port
Maximum Frame Size            : 9600
```

location: The command lets you Configure system location

Syntax: **location** <LINE>

Parameter : **<LINE>:** Up to 255 characters describing system location

EXAMPLE:

```
Switch(system)# location taipei
Switch(system)# show
Model Name                    : GEPoEL2-ESW26
System Description            : 24-Port 10/100/1000Base-T + 2 (100/1G) SFP PoE+
L2 Plus Managed Switch
Location                      : taipei
Contact                       : david +886123456789
Device Name                   : GEPoEL2-ESW26
System Uptime                 : 3d 01:47:59
Current Time                  : 2011-01-04 02:47:59
BIOS Version                  : v1.00
Firmware Version              : v1.28
Hardware-Mechanical Version   : v1.00-v1.00
Series Number                 : 010199887766
Host IP Address               : 192.168.6.127
Subnet Mask                   : 255.255.255.0
Gateway IP Address            : 0.0.0.0
Host MAC Address              : 00-40-c7-23-26-00
Console Baudrate              : 115200
RAM Size                      : 64
Flash Size                    : 16
CPU Load (100ms, 1s, 10s)     : 0%, 18%, 16%
Bridge FDB Size               : 8192 MAC addresses
Transmit Queue                : 8 queues per port
Maximum Frame Size            : 9600
```

name: The command lets you Configure device name

Syntax: **name** <WORD>

Parameter : **<WORD>:** Up to 255 characters describing device name

EXAMPLE:

```
Switch(system)# name davidswitch
Switch(system)# show
Model Name                    : GEPoEL2-ESW26
System Description            : 24-Port 10/100/1000Base-T + 2 (100/1G) SFP PoE+
L2 Plus Managed Switch
Location                      : taipei
Contact                       : david +886123456789
Device Name                   : davidswitch
System Uptime                 : 3d 01:49:43
Current Time                  : 2011-01-04 02:49:43
BIOS Version                  : v1.00
Firmware Version              : v1.28
Hardware-Mechanical Version   : v1.00-v1.00
Series Number                 : 010199887766
Host IP Address               : 192.168.6.127
Subnet Mask                   : 255.255.255.0
Gateway IP Address            : 0.0.0.0
Host MAC Address              : 00-40-c7-23-26-00
Console Baudrate              : 115200
RAM Size                      : 64
Flash Size                    : 16
CPU Load (100ms, 1s, 10s)     : 14%, 13%, 16%
Bridge FDB Size               : 8192 MAC addresses
Transmit Queue                : 8 queues per port
Maximum Frame Size            : 9600
```

show: The command lets you Show system information

Syntax: **show** <cr>

Parameter : **<cr>** means press the Enter key.

EXAMPLE:

```
Switch(system)# show
Model Name                    : GEPoEL2-ESW26
System Description            : 24-Port 10/100/1000Base-T + 2 (100/1G) SFP PoE+
L2 Plus Managed Switch
Location                      :
Contact                       :
Device Name                   : GEPoEL2-ESW26
System Uptime                 : 3d 01:45:29
Current Time                  : 2011-01-04 02:45:29
BIOS Version                  : v1.00
Firmware Version              : v1.28
Hardware-Mechanical Version   : v1.00-v1.00
Series Number                 : 010199887766
Host IP Address               : 192.168.6.127
Subnet Mask                   : 255.255.255.0
Gateway IP Address            : 0.0.0.0
Host MAC Address              : 00-40-c7-23-26-00
Console Baudrate              : 115200
RAM Size                      : 64
Flash Size                    : 16
CPU Load (100ms, 1s, 10s)     : 0%, 21%, 17%
Bridge FDB Size               : 8192 MAC addresses
Transmit Queue                : 8 queues per port
Maximum Frame Size            : 9600
```

EXAMPLE:

```
Switch(system)# show
Model Name                    : GEPoEL2-ESW26
System Description            : 24-Port 10/100/1000Base-T + 2 (100/1G) SFP PoE+
L2 Plus Managed Switch
Location                      :
Contact                       :
Device Name                   : GEPoEL2-ESW26
System Uptime                 : 3d 01:45:29
Current Time                  : 2011-01-04 02:45:29
BIOS Version                  : v1.00
Firmware Version              : v1.28
Hardware-Mechanical Version   : v1.00-v1.00
Series Number                 : 010199887766
Host IP Address               : 192.168.6.127
Subnet Mask                   : 255.255.255.0
Gateway IP Address            : 0.0.0.0
Host MAC Address              : 00-40-c7-23-26-00
Console Baudrate              : 115200
RAM Size                      : 64
Flash Size                    : 16
CPU Load (100ms, 1s, 10s)     : 0%, 21%, 17%
Bridge FDB Size               : 8192 MAC addresses
Transmit Queue                : 8 queues per port
Maximum Frame Size            : 9600
```

Chapter 46 Thermal Protection Commands of CLI

Thermal

The section describes how to inspect and configure the current setting for controlling thermal protection. Thermal protection is used to protect the chip from getting overheated. Only the LGB5128A supports this feature.
When the temperature exceeds the configured thermal protection temperature, ports will be turned off in order to decrease the power consumption. It is possible to arrange the ports with different priorities. Each priority can be given a temperature at which the corresponding ports will be turned off.

Table 45: Thermal Protection Commands

Command	Function
port-priority	Configure the port priority
priority-temp	Configure the temperature at which the ports will shut down
show	Show thermal protection information

port-priority: The command lets you Configure the port priority

Syntax: **port-priority** <port-list> <0-3>

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5

<0-3>: Port priority

EXAMPLE:

```
Switch(thermal)# port-priority 1 3
Switch(thermal)# show
Priority  Temperature
--------  -----------
0         255 C
1         255 C
2         255 C
3         255 C

Port Priority Chip Temperature Port status
---- -------- ---------------- ------------------------------------------
1    3                  60 C Port link operating normally
2    0                  59 C Port link operating normally
3    0                  59 C Port link operating normally
```

priority-temp: The command lets you Configure the temperature at which the ports will shut down

Publication date: Feb., 2012
Revision A1

Syntax: **priority-temp** <0-3> <0-255>

Parameter : **<0-3>:** Port priority

<0-255>: The temperature at which the ports with the corresponding priority will be turned off

EXAMPLE:

```
Switch(thermal)# priority-temp 1 99
Switch(thermal)# show
Priority  Temperature
--------  -----------
0         255 C
1         99 C
2         255 C
3         255 C

Port Priority Chip Temperature Port status
---- -------- ---------------- ---------------------------------------------
1    3                  59 C Port link operating normally
2    0                  59 C Port link operating normally
3    0                  59 C Port link operating normally
```

show: The command lets you Show thermal protection information

Syntax: **show** <cr>

Parameter : **<cr>** means press the Enter key.

EXAMPLE:

```
Switch(thermal)# show
Priority  Temperature
--------  -----------
0         255 C
1         255 C
2         255 C
3         255 C

Port Priority Chip Temperature Port status
---- -------- ---------------- ---------------------------------------------
1    0                  59 C Port link operating normally
2    0                  59 C Port link operating normally
3    0                  59 C Port link operating normally
4    0                  59 C Port link operating normally
```

Chapter 47 System time Commands of CLI

Time

This page configures the switch Time. Time configure includes Time Configuration and NTP Configuration

The switch provides manual and automatic ways to set the system time via NTP. Manual setting is simple and you just input “Year”, “Month”, “Day”, “Hour”, “Minute” and “Second” within the valid value range indicated in each item.

Table 46: Time Commands

Command	Function
clock-source	Enable/Diable applicant administrative control
daylight	Set the GARP join timer configuration
delete	Set the GARP leave all timer configuration
manual	Set the GARP leave timer configuration
ntp	Configure NTP server
show	Show the GARP configuration
time-zone	Configure system time zone

clock-source: The command lets you configure the clock source

Syntax: **clock-source** local/ ntp

Parameter : **local:** Local settings

ntp: Use NTP to synchronize system clock

EXAMPLE:

```
Switch(time)# clock-source ntp
Switch(time)# show daylight
Clock Source          : NTP Server
Local Time            : 2011-01-01 07:19:44 (YYYY-MM-DD HH:MM:SS)
Time Zone Offset      : 0 (min)
Daylight Savings      : Disabled
```

daylight: The command indicates Daylight Savings operation

Syntax: **daylight** disable

enable <1-1440> By-dates <YYYY:MM:DD> <HH:MM>

<YYYY:MM:DD> <HH:MM>

enable <1-1440> Recurring <DAY> <WORD> <MONTH> <HH:MM> <DAY> <WORD> <MONTH> <HH:MM>

Parameter :

disable: Disable Daylight Savings operation

enable: Enable Daylight Savings operation

<1-1440>: Minute. Time Set Offset.

By-dates: Manually enter day and time that DST starts and ends

<YYYY:MM:DD>: Day that DST starts

<HH:MM>: Time that DST starts

<YYYY:MM:DD>: Day that DST ends

<HH:MM>: Time that DST ends

Recurring: DST occurs on the same date every year

<DAY>: Sun, Mon, Tue, Wed, Thu, Fri, Sat at which DST begins every year

<WORD>: first, 2, 3, 4, last at which DST begins every year

<MONTH>: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec at which DST begins every year

<HH:MM>: The time at which DST begins every year

<DAY>: Sun, Mon, Tue, Wed, Thu, Fri, Sat at which DST ends every year

<WORD>: first, 2, 3, 4, last at which DST ends every year

<MONTH>: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec at which DST ends every year

<HH:MM>: The time at which DST ends every year

EXAMPLE:

```
Switch(time)# daylight enable 1440 by-dates 2012:03:01 10:00 2012:04:01 09:00
Switch(time)# show daylight
Clock Source          : NTP Server
Local Time            : 2011-01-01 07:23:21 (YYYY-MM-DD HH:MM:SS)
Time Zone Offset      : 0 (min)
Daylight Savings      : Enabled
Time Set Offset       : 1440 (min)
Daylight Savings Type : By dates
From                  : 2012-03-01 10:00 (YYYY-MM-DD HH:MM)
To                    : 2012-04-01 09:00 (YYYY-MM-DD HH:MM)


Switch(time)# daylight enable 1000 recurring wed 2 jan 11:00 sun 3 may 12:00
Switch(time)# show daylight
Clock Source          : NTP Server
Local Time            : 2011-01-01 07:28:43 (YYYY-MM-DD HH:MM:SS)
Time Zone Offset      : 0 (min)
Daylight Savings      : Enabled
Time Set Offset       : 1000 (min)
Daylight Savings Type : Recurring
From                  : Day:Wed Week:2     Month:Jan Time:11:00
To                    : Day:Sun Week:3     Month:May Time:12:00
```

delete: The command lets you delete NTP server

Syntax: **delete** <1-5>

Parameter : **<1-5>:** NTP server index

EXAMPLE:

```
Switch(time)# delete 1
```

manual: The command lets you configure system time manually

Syntax: **manual** <YYYY:MM:DD> <HH:MM:SS>

Parameter : **<YYYY:MM:DD>**: Date of system, example: 2011:06:25

<HH:MM:SS>: Time, example: 23:10:55

EXAMPLE:

```
Switch(time)# manual 2011:12:12 10:00:00
Switch(time)# show daylight
Clock Source          : Local Settings
Local Time            : 2011-12-12 10:00:07 (YYYY-MM-DD HH:MM:SS)
Time Zone Offset      : 0 (min)
Daylight Savings      : Enabled
Time Set Offset       : 1000 (min)
Daylight Savings Type : Recurring
From                  : Day:Wed Week:2     Month:Jan Time:11:00
To                    : Day:Sun Week:3     Month:May Time:12:00
```

ntp: The command lets you configure NTP server

Syntax: **ntp** <1-5> <ipv6-address>/<ip-hostname>

Parameter : **<1-5>:** NTP server index

<ipv6-address>: NTP server IPv6 address

IPv6 address is in 128-bit records represented as eight fields of up to four hexadecimal digits with a colon separating each field (:). For example, 'fe80::215:c5ff:fe03:4dc7'. The symbol '::' is a special syntax that can be used as a shorthand way of representing multiple 16-bit groups of contiguous zeros, but it can only appear once. It is also used following a legal IPv4 address. For example, '::192.1.2.34'

<ip-hostname>: NTP server IP address or hostname

EXAMPLE:

```
Switch(time)# ntp 1 64.90.182.55
Switch(time)# show ntp
Index   Server IP host address or a host name string
-----   ------------------------------------------------------
1       64.90.182.55
```

show: The command lets you show time information

Syntax: **show** daylight/ ntp

Parameter : **daylight**: Show time information

ntp: Show NTP information

EXAMPLE:

```
Switch(time)# show daylight
Clock Source          : Local Settings
Local Time            : 2011-01-01 07:17:29 (YYYY-MM-DD HH:MM:SS)
Time Zone Offset      : 0 (min)
Daylight Savings      : Disabled


Switch(time)# show ntp
Index   Server IP host address or a host name string
-----   ------------------------------------------------------
1
2
3
4
5
```

time-zone: The command lets you configure system time zone

Syntax: **time-zone** <HH:MM>

Parameter : **<HH:MM>:** The time difference between GMT and local time, the possible value is from GMT-12:00 to GMT+12:00

EXAMPLE:

```
Switch(time)# time-zone 01:00
Switch(time)# show daylight
Clock Source          : NTP Server
Local Time            : 2011-12-12 11:14:24 (YYYY-MM-DD HH:MM:SS)
Time Zone Offset      : 60 (min)
Daylight Savings      : Enabled
Time Set Offset       : 1000 (min)
Daylight Savings Type : Recurring
From                  : Day:Wed Week:2     Month:Jan Time:11:00
To                    : Day:Sun Week:3     Month:May Time:12:00
```

Chapter 48 UPnP Commands of CLI

UPnP

UPnP is an acronym for Universal Plug and Play. The goals of UPnP are to allow devices to connect seamlessly and to simplify the implementation of networks in the home (data sharing, communications, and entertainment) and in corporate environments for simplified installation of computer components.

Table 47: UPnP Commands

Command	Function
duration	Configure the advertising duration
mode	Configure UPnP mode
show	Show UPnP configuration
ttl	Configure the TTL value of the IP header in SSDP message

duration:

The command lets you Configure the advertising duration

Syntax: **duration** <100-86400>

Parameter : **<100-86400>:** UPnP duration range

EXAMPLE:

```
Switch(upnp)# duration 86400
Switch(upnp)# show
UPnP Mode                : Disabled
UPnP TTL                 : 4
UPnP Advertising Duration : 86400
```

mode:

The command lets you Configure UPnP mode

Syntax: **mode** disable/ enable

Parameter : **disable:** Disable UPnP

enable: Enable UPnP

EXAMPLE:

```
Switch(upnp)# mode enable
Switch(upnp)# show
UPnP Mode                : Enabled
UPnP TTL                 : 4
UPnP Advertising Duration : 86400
```

show: The command lets you Show UPnP configuration

Syntax: **show** <cr>

Parameter : **<cr>** means it without any parameter needs to type.

EXAMPLE:

```
Switch(upnp)# show
UPnP Mode                : Enabled
UPnP TTL                 : 4
UPnP Advertising Duration : 86400
```

ttl: The command lets you Configure the TTL value of the IP header in SSDP message

Syntax: **ttl** <1-255>

Parameter : **<1-255>:** UPnP TTL value

EXAMPLE:

```
Switch(upnp)# ttl 255
Switch(upnp)# show
UPnP Mode                : Enabled
UPnP TTL                 : 255
UPnP Advertising Duration : 86400
```

Chapter 49 VCL Commands of CLI

VCL

VLAN Control List indicates two types of VLAN: MAC address-based VLAN and Protocol -based VLAN.

MAC address-based VLAN decides the VLAN for forwarding an untagged frame based on the source MAC address of the frame.

MAC-based VLANs group VLAN members by MAC address. With MAC-based VLAN configured, the device adds a VLAN tag to an untagged frame according to its source MAC address. MAC-based VLANs are mostly used in conjunction with security technologies such as 802.1X to provide secure, flexible network access for terminal devices.

Protocol -based VLAN supports Protocol including Ethernet LLC and SNAP Protocol.

Table 48: vcl Commands

Command	Function
delete	Delete command
mac-vlan	Configure MAC-based VLAN membership
protocol-vlan	Configure protocol-based VLAN
show	Show VCL status command

delete: The command lets you Delete command

Syntax: **delete** mac-vlan <mac-address>

delete protocol-vlan protocol Ethernet <0x0600-0xffff>

llc <0x00-0xff> <0x00-0xff>

snap <oui-address> <0x0000-0xffff>

delete protocol-vlan vlan <WORD>

Parameter : **mac-vlan**: Delete MAC-based VLAN entry

<mac-address>: MAC address, format 0a-1b-2c-3d-4e-5f

protocol-vlan: Delete protocol-based VLAN entry

protocol: Delete protocol-based VLAN ethertype protocol to group mapping

Ethernet: Delete protocol-based VLAN Ethernet-II protocol to group mapping

<0x0600-0xffff>: Ether type

llc: Delete protocol-based VLAN LLC protocol to group mapping

<0x00-0xff>: DSAP value

<0x00-0xff>: SSAP value

snap: Delete protocol-based VLAN SNAP protocol to group mapping

<oui-address>: OUI address, format : 00-40-c7

<0x0000-0xffff>: Protocol ID is the Ethernet type field value for the protocol running on top of SNAP

vlan: Delete protocol-based VLAN group to VLAN mapping

<WORD>: Up to 16 characters to describe protocol-based VLAN group name

EXAMPLE:

```
Switch(vcl)# delete mac-vlan 00-00-00-00-00-11

Switch(vcl)# delete protocol-vlan vlan david
```

NOTE: You need to set MAC VLAN or Protocol VLAN first, then you can delete and clear the configuration.

mac-vlan:

The command lets you Configure MAC-based VLAN membership

Syntax: **mac-vlan** <mac-address> <1-4094> <port-list>

Parameter : **<mac-address>:** MAC address, format 0a-1b-2c-3d-4e-5f

<1-4094>: VLAN ID, available value is from 1 to 4094

<port-list>: available value is from switch physical port density, format: 1,3-5

EXAMPLE:

```
Switch(vcl)# mac-vlan 0a-1b-2c-3d-4e-5f 4094 2
Switch(vcl)# show mac-config
MAC Address       VID   Ports
----------------  ----  -----
0a-1b-2c-3d-4e-5f  4094  2
```

protocol-vlan:

The command lets you Configure protocol-based VLAN

Syntax: **protocol-vlan** <port-list> disable/ enable

Parameter : **protocol**: protocol-based VLAN ethertype protocol to group mapping

Ethernet: protocol-based VLAN Ethernet-II protocol to group mapping

<0x0600-0xffff>: Ether type

llc: protocol-based VLAN LLC protocol to group mapping

<0x00-0xff>: DSAP value

<0x00-0xff>: SSAP value

snap: protocol-based VLAN SNAP protocol to group mapping

<oui-address>: OUI address, format : 00-40-c7

<0x0000-0xffff>: Protocol ID is the Ethernet type field value for the protocol running on top of SNAP

vlan: protocol-based VLAN group to VLAN mapping

<WORD>: Up to 16 characters to describe protocol-based VLAN group name

EXAMPLE:

```
Switch(vcl)# protocol-vlan protocol Ethernet 0XFFFF david
Switch(vcl)# show protocol-vlan
Protocol Type  Protocol (Value)          Group Name
-------------  ------------------------  ----------------
Ethernet       ETYPE:0xffff              david


Switch(vcl)# protocol-vlan protocol snap 00-10-cc 0xeeee kevin
Switch(vcl)# show protocol-vlan
Protocol Type  Protocol (Value)          Group Name
-------------  ------------------------  ----------------
SNAP           OUI-00:10:cc; PID:0xeeee  kevin
Ethernet       ETYPE:0xffff              david


Switch(vcl)# protocol-vlan vlan jack 3000 1
Switch(vcl)# show protocol-vlan
Protocol Type  Protocol (Value)          Group Name
-------------  ------------------------  ----------------
SNAP           OUI-00:10:cc; PID:0xeeee  kevin
Ethernet       ETYPE:0xffff              david

Group Name        VID   Ports
----------------  ----  -----
jack              3000  1
```

show: The command lets you Show VCL status command

Syntax: **show** mac-config

mac-status combined/ nas/ static

protocol-vlan

Parameter : **mac-config:** Show MAC-based VLAN entry

mac-status: Show MAC-based VLAN status

combined: Show all the combined VCL MAC-based VLAN database

nas: Show the VCL MAC-based VLAN configured by NAS

static: Show the VCL MAC-based VLAN entries configured by the administrator

protocol-vlan: Show protocol-based VLAN configuration

EXAMPLE:

```
Switch(vcl)# show mac-config
MAC Address        VID   Ports
-----------------  ----  -----
00-00-00-00-00-00  3     5,6
00-00-00-00-00-11  1     1,2
00-00-00-00-00-22  2     3,4
00-00-00-00-00-33  1     2,3


Switch(vcl)# show mac-status combined
MAC Address        VID   Ports
-----------------  ----  ----------------------
0a-1b-2c-3d-4e-5f  4094  2


Switch(vcl)# show protocol-vlan
Protocol Type  Protocol (Value)          Group Name
-------------  ------------------------  ----------------
SNAP           OUI-00:10:cc; PID:0xeeee  kevin
Ethernet       ETYPE:0xffff              david

Group Name        VID   Ports
----------------  ----  -----
jack              3000  1
```

Chapter 50 VLAN Commands of CLI

VLAN

You can assign a specific VLAN for management purposes. The management VLAN is used to establish an IP connection to the switch from a workstation connected to a port in the VLAN. This connection supports a VSM, SNMP, and Telnet session. By default, the active management VLAN is VLAN 1. Only one management VLAN can be active at a time.

Table 49: VLAN Commands

Command	Function
delete	Delete VLAN group
egress-rule	Configure egress-rule of switch ports
forbidden	Configure forbidden VLAN group
frame-type	Configure frame type of switch ports
ingress-filtering	Configure ingress filtering of switch ports
port-type	Configure port type of switch ports
pvid	Configure port VLAN ID
show	Show VLAN information
tag-group	Configure tag-based VLAN group
tpid	Configure the TPID used for Custom S-ports. This is a global setting for all the Custom S-ports

delete:

The command lets you Delete VLAN group

Syntax: **delete** forbidden/ group <1-4094>

Parameter : **forbidden:** Delete VLAN forbidden group

group: Delete tag-based VLAN group

<1-4094>: VLAN ID, available value is from 1 to 4094

EXAMPLE:

```
Switch(vlan)# delete forbidden 1

Switch(vlan)# delete group 1
```

egress-rule:

The command lets you Configure egress-rule of switch ports

Syntax: **egress-rule** <port-list> access/ hybrid/ trunk

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5
access: Untag all frames

hybrid: Tag all frames except VLAN ID same as PVID

trunk: Tag all frames

EXAMPLE:

```
Switch(vlan)# egress-rule 1 access
Switch(vlan)# egress-rule 2 hybrid
Switch(vlan)# egress-rule 3 trunk
Switch(vlan)# show port-config
TPID for Custom S-port : 0x88a8

Port  PVID  Frame Type  Ingress Filter  Egress Rule  Port Type
----  ----  ----------  --------------  -----------  -------------
1     1     All         Disabled        Access       UnAware
2     1     All         Disabled        Hybrid       UnAware
3     1     All         Disabled        Trunk        UnAware
```

forbidden:

The command lets you Configure forbidden VLAN group

Syntax: **forbidden** <1-4094> <WORD> <port-list>

Parameter : **<1-4094>:** VLAN ID, available value is from 1 to 4094

<WORD>: Up to 33 characters describing VLAN name

<port-list>: available value is from switch physical port density, format: 1,3-5

EXAMPLE:

```
Switch(vlan)# forbidden 1 david 2-5
Switch(vlan)# show forbidden
VID   VLAN Name                         Ports
----  --------------------------------  -----------------
1     david                             2-5
```

frame-type:

The command lets you Configure frame type of switch ports

Syntax: **frame-type** <port-list> all/ tagged/ untagged

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5

all: Accept all frames

tagged: Accept tagged frames only

untagged: Accept untagged frames only

EXAMPLE:

```
Switch(vlan)# frame-type 1 tagged
Switch(vlan)# frame-type 2 untagged
Switch(vlan)# show port-config
TPID for Custom S-port : 0x88a8

Port  PVID  Frame Type  Ingress Filter  Egress Rule  Port Type
----  ----  ----------  --------------  -----------  -------------
1     1     Tagged      Disabled        Access       UnAware
2     1     Untagged    Disabled        Hybrid       UnAware
3     1     All         Disabled        Trunk        UnAware
```

ingress-filtering:

The command lets you Configure ingress filtering of switch ports

Syntax: **ingress-filtering** <port-list> disable/ enable

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5

disable: Disable ingress filtering

enable: Enable ingress filtering. If ingress port is not a member of the classified VLAN of the frame, the frame is discarded.

EXAMPLE:

```
Switch(vlan)# ingress-filtering 1 enable
Switch(vlan)# show port-config
TPID for Custom S-port : 0x88a8

Port  PVID  Frame Type  Ingress Filter  Egress Rule  Port Type
----  ----  ----------  --------------  -----------  -------------
1     1     Tagged      Enabled         Access       UnAware
2     1     Untagged    Disabled        Hybrid       UnAware
3     1     All         Disabled        Trunk        UnAware
```

port-type:

The command lets you Configure port type of switch ports

Syntax: **port-type** <port-list> c-port/ s-custom-port/ s-port/ unaware

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5

c-port: Customer port

s-custom-port: Custom Service port

s-port: Service port

unaware: VLAN unaware port

EXAMPLE:

```
Switch(vlan)# port-type 2 c-port
Switch(vlan)# port-type 3 s-port
Switch(vlan)# port-type 4 s-custom-port
Switch(vlan)# show port-config
TPID for Custom S-port : 0x88a8

Port  PVID  Frame Type  Ingress Filter  Egress Rule  Port Type
----  ----  ----------  --------------  -----------  -------------
1     1     Tagged      Enabled         Access       UnAware
2     1     Untagged    Disabled        Hybrid       C-Port
3     1     All         Disabled        Trunk        S-Port
4     1     All         Disabled        Hybrid       S-Custom-Port
```

pvid: The command lets you Configure port VLAN ID

Syntax: **pvid** <port-list> <1-4094>

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5

<1-4094>: VLAN ID, available value is from 1 to 4094

EXAMPLE:

```
Switch(vlan)# pvid 1 4000
Switch(vlan)# show port-config
TPID for Custom S-port : 0x88a8

Port  PVID  Frame Type  Ingress Filter  Egress Rule  Port Type
----  ----  ----------  --------------  -----------  -------------
1     4000  All         Disabled        Hybrid       UnAware
2     1     All         Disabled        Hybrid       UnAware
3     1     All         Disabled        Hybrid       UnAware
```

show: The command lets you Show VLAN information

Syntax: **show** forbidden/ port-config

show port-status combined/ gvrp/ … / voice

show vlan combined/ gvrp/ … / voice

Parameter : **forbidden**: Show VLAN forbidden group

port-config: Show VLAN port configuration

port-status: Show VLAN port status

combined: VLAN port status for combined VLAN Users

gvrp: VLAN port status for GVRP

mstp: VLAN port status for MSTP

mvr: VLAN port status for MVR

nas: VLAN port status for NAS

static: Static VLAN port status

voice: VLAN port status for Voice VLAN

vlan: Show VLAN group

combined: Show all the combined VLAN database

gvrp: Show the VLANs configured by GVRP

mstp: Show the VLANs configured by MSTP

mvr: Show the VLANs configured by MVR

nas: Show the VLANs configured by NAS

static: Show the VLAN entries configured by the administrator

vcl: Show the VLANs configured by VCL

voice: Show the VLANs configured by Voice VLAN

EXAMPLE:

```
Switch(vlan)# show port-config
TPID for Custom S-port : 0x88a8

Port  PVID  Frame Type  Ingress Filter  Egress Rule  Port Type
----  ----  ----------  --------------  -----------  -------------
1     1     All         Disabled        Hybrid       UnAware
2     1     All         Disabled        Hybrid       UnAware
3     1     All         Disabled        Hybrid       UnAware


Switch(vlan)# show port-status combined
Port  PVID  Frame Type  Ingress Filter Tx Tag       UVID  Port Type     Conflict
----  ----  ----------  -------------- -----------  ----  -------------
--------
1     1     All         Disabled       Untag This   1     UnAware       No
2     1     All         Disabled       Untag This   1     UnAware       No
3     1     All         Disabled       Untag This   1     UnAware       No


Switch(vlan)# show vlan combined
VID   VLAN Name                        User        Ports
----  --------------------------------  ----------  -----------------
1     default                           Combined    1-26
```

tag-group: The command lets you Configure tag-based VLAN group

Syntax: **tag-group** <1-4094> <WORD> <port-list>

Parameter : **<1-4094>:** VLAN ID, available value is from 1 to 4094

<WORD>: Up to 33 characters describing VLAN name

<port-list>: available value is from switch physical port density, format: 1,3-5

EXAMPLE:

```
Switch(vlan)# tag-group 3000 david 2
Switch(vlan)# show vlan
VID   VLAN Name                        User       Ports
----  --------------------------------  ---------  -----------------
1     default                          Static     1-26
3000  david                             Static     2
```

tpid: The command lets you Configure the TPID used for Custom S-ports. This is a global setting for all the Custom S-ports

Syntax: **tpid**

Parameter : **<0x0600-0xffff>:** Configure TPID value, available value is from 0x600 to 0xffff

EXAMPLE:

```
Switch(vlan)# tpid 0xffff
Switch(vlan)# show port-config
TPID for Custom S-port : 0xffff

Port  PVID  Frame Type  Ingress Filter  Egress Rule  Port Type
----  ----  ----------  --------------  -----------  -------------
1     1     All         Disabled        Hybrid       UnAware
2     1     All         Disabled        Hybrid       UnAware
3     1     All         Disabled        Hybrid       UnAware
```

Chapter 51 Voice VLAN Commands of CLI

Voice VLAN

Voice VLAN is VLAN configured specially for voice traffic. By adding the ports with voice devices attached to voice VLAN, we can perform QoS-related configuration for voice data, ensuring the transmission priority of voice traffic and voice quality.

The Voice VLAN feature enables voice traffic forwarding on the Voice VLAN, then the switch can classify and schedule network traffic. It is recommended that there be two VLANs on a port—one for voice, one for data. Before connecting the IP device to the switch, the IP phone should configure the voice VLAN ID correctly.

Table 50: Voice VLAN Commands

Command	Function
config	Configure Voice VLAN
delete	Delete commands
discovery	Configure Voice VLAN discovery protocol
oui	Create Voice VLAN OUI entry. Modify OUI table will restart auto detect OUI process
port-mode	Configure Voice VLAN port mode
security	Configure Voice VLAN port security mode
show	Show Voice VLAN information

config: The command lets you Configure Voice VLAN

Syntax: **config** disable

config enable <1-4094> <10-1000000> <0-7>

Parameter : **disable:** Disable Voice VLAN mode operation

enable: Enable Voice VLAN mode operation

<1-4094>: VLAN ID, available value is from 1 to 4094

<10-1000000>: Voice VLAN secure aging time, available value is from 10 to 1000000

<0-7>: Voice VLAN traffic class, all traffic on the Voice VLAN will apply this class, available value is from 0(Low) to 7(High)

EXAMPLE:

```
Switch(voice-vlan)# config enable 2 8888 7
Switch(voice-vlan)# show config
Voice VLAN Mode              : Enabled
Voice VLAN VLAN ID           : 2
Voice VLAN Age Time(seconds)  : 8888
Voice VLAN Traffic Class     : 7

Port  Mode      Security  Discovery Protocol
----  --------  --------  ------------------
1     Disabled  Disabled  OUI
2     Disabled  Disabled  OUI
3     Disabled  Disabled  OUI
```

delete: The command lets you Delete command

Syntax: **delete** oui <oui-address>

Parameter : **oui:** Delete Voice VLAN OUI entry. Modify OUI table will restart auto detect OUI process

<oui-address>: OUI address, format : 0a-1b-2c

EXAMPLE:

```
Switch(voice-vlan)# delete oui 0a-1b-2c
```

discovery: The command lets you Configure Voice VLAN discovery protocol

Syntax: **discovery** <port-list> both/ lldp/ oui

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5

both: Both OUI and LLDP

lldp: Detect telephony device by LLDP

oui: Detect telephony device by OUI address

EXAMPLE:

```
Switch(voice-vlan)# discovery 2 both
Switch(voice-vlan)# discovery 3 lldp
Switch(voice-vlan)# show config
Voice VLAN Mode              : Enabled
Voice VLAN VLAN ID           : 2
Voice VLAN Age Time(seconds)  : 8888
Voice VLAN Traffic Class      : 7

Port  Mode      Security  Discovery Protocol
----  --------  --------  ------------------
1     Disabled  Disabled  OUI
2     Disabled  Disabled  Both
3     Disabled  Disabled  LLDP
```

oui:

The command lets you Create Voice VLAN OUI entry. Modify OUI table will restart auto detect OUI process

Syntax: **oui** <oui-address> <LINE>

Parameter : **<oui-address>:** OUI address, format : 0a-1b-2c

<LINE>: Up to 32 characters describing OUI address

EXAMPLE:

```
Switch(voice-vlan)# oui 0a-1b-2c david
Switch(voice-vlan)# show oui
No  Telephony OUI  Description
--  -------------  ----------------
1   00-01-E3       Siemens AG phones
2   00-03-6B       Cisco phones
3   00-0F-E2       H3C phones
4   00-60-B9       Philips and NEC AG phones
5   00-D0-1E       Pingtel phones
6   00-E0-75       Polycom phones
7   00-E0-BB       3Com phones
8   0A-1B-2C       david
```

port-mode:

The command lets you Configure Voice VLAN port mode

Syntax: **port-mode** <port-list> auto/ disable/ force

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5

auto: Enable auto detect mode. It detects whether there is VoIP phone attached on the specific port and configure the Voice VLAN members automatically

disable: Disjoin from Voice VLAN

force: Forced join to Voice VLAN

EXAMPLE:

```
Switch(voice-vlan)# port-mode 1 auto
Switch(voice-vlan)# port-mode 2 force
Switch(voice-vlan)# show config
Voice VLAN Mode              : Enabled
Voice VLAN VLAN ID           : 2
Voice VLAN Age Time(seconds)  : 8888
Voice VLAN Traffic Class     : 7

Port  Mode      Security  Discovery Protocol
----  --------  --------  ------------------
1     Auto      Disabled  OUI
2     Forced    Disabled  OUI
3     Disabled  Disabled  OUI
```

security:

The command lets you Configure Voice VLAN port security mode

Syntax: **security** <port-list> disable/ enable

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5

disable: Disjoin from Voice VLAN

enable: Enable Voice VLAN security mode. When the function is enabled, all non-telephone MAC addresses in Voice VLAN will be blocked for 10 seconds.

EXAMPLE:

```
Switch(voice-vlan)# security 1 enable
Switch(voice-vlan)# show config
Voice VLAN Mode              : Enabled
Voice VLAN VLAN ID           : 2
Voice VLAN Age Time(seconds)  : 8888
Voice VLAN Traffic Class     : 7

Port  Mode      Security  Discovery Protocol
----  --------  --------  ------------------
1     Disabled   Enabled   OUI
2     Disabled   Disabled  OUI
3     Disabled   Disabled  OUI
```

show:

The command lets you Show Voice VLAN information

Syntax: **show** config/ oui

Parameter : **config:** Show Voice VLAN configuration

oui: Show OUI address

EXAMPLE:

```
Switch(voice-vlan)# show config
Voice VLAN Mode              : Disabled
Voice VLAN VLAN ID           : 1000
Voice VLAN Age Time(seconds)  : 86400
Voice VLAN Traffic Class     : 7

Port  Mode      Security  Discovery Protocol
----  --------  --------  ------------------
1     Disabled  Disabled  OUI
2     Disabled  Disabled  OUI
3     Disabled  Disabled  OUI


Switch(voice-vlan)# show oui
No  Telephony OUI  Description
--  -------------  ----------------
1   00-01-E3       Siemens AG phones
2   00-03-6B       Cisco phones
3   00-0F-E2       H3C phones
4   00-60-B9       Philips and NEC AG phones
5   00-D0-1E       Pingtel phones
6   00-E0-75       Polycom phones
7   00-E0-BB       3Com phones
```

Chapter 52 EEE Commands of CLI

EEE

The section which allows the user to inspect and configure the current EEE port settings. Only the LGB5128A supports EEE Commands.

EEE is a power saving option that reduces the power usage when there is very low traffic use (or no traffic).

EEE works by powering down circuits when there is no traffic. When a port gets data to be transmitted all circuits are powered up. The time it takes to power up the circuits is named wakeup time. The default wakeup time is 17 us for 1Gbit links and 30 us for other link speeds. EEE devices must agree upon the value of the wakeup time in order to make sure that both the receiving and transmitting device have all circuits powered up when traffic is transmitted. The devices can exchange information about the devices' wakeup time using the LLDP protocol.

For maximizing the power saving, the circuit isn't started when transmit data are ready for a port, but is instead queued until 3000 bytes of data are ready to be transmitted. It does not cause a large delay if data less then 3000 bytes will be transmitted, data are always transmitted after 48 us, giving a maximum latency of 48 us + the wakeup time.

If desired, you can minimize the latency for specific frames by mapping the frames to a specific queue (done with QOS), and then mark the queue as an urgent queue. When an urgent queue gets data to be transmitted, the circuits will be powered up at once and the latency will be reduced to the wakeup time.

Table 51: EEE Commands

Command	Function
mode	Configure EEE mode
show	Show EEE information
urgent-queue	Configure EEE urgent queue

mode: The command lets you Configure EEE mode

Syntax: **mode** <port-list> disable/ enable

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5
disable: Disable Energy Efficient Ethernet
enable: Enable Energy Efficient Ethernet

EXAMPLE:

```
Switch(eee)# mode 2 enable
Switch(eee)# show
Port  Mode      Urgent Queues
----  --------  -------------
1     Disabled  none
2     Enabled   none
3     Disabled  none
```

show: The command lets you Show EEE information

Syntax: **show** <cr>

Parameter : **<cr>:** means it without any parameter needs to type.

EXAMPLE:

```
Switch(eee)# show
Port  Mode      Urgent Queues
----  --------  -------------
1     Disabled  none
2     Disabled  none
3     Disabled  none
```

urgent-queue: The command lets you Configure EEE urgent queue

Syntax: **urgent-queue** <port-list> <queue-list> disable/ enable

Parameter : **<port-list>:** available value is from switch physical port density, format: 1,3-5
<queue-list>: Queue list, format : 1,3-5

disable: Queue will postpone the transmission until 3000 bytes are ready to be transmitted

enable: Queues set will activate transmission of frames as soon as any data is available

EXAMPLE:

```
Switch(eee)# urgent-queue 1 4 enable
Switch(eee)# show
Port  Mode      Urgent Queues
----  --------  -------------
1     Disabled  4
2     Enabled   none
3     Disabled  none
```

Chapter 53 Global Commands of CLI

Global

The Global commands is probably the most commonly used in the CLI console. It is used for global configuration at any level of command.

Table 53: Global Commands

Command	Function
auto-logout	Configure time of inactivity before automatic logout
exit	Exit from current mode
help	Show available commands
history	Show a list of previously run commands
logout	Disconnect
quit	Disconnect
restore	Restore running configuration
save	Save running configuration

auto-logout: The command lets you Configure time of inactivity before automatic logout

Syntax: **auto-logout** <10-3600>

Parameter : **<10-3600>:** Time in seconds of inactivity before automatic logout.

EXAMPLE:

```
Switch# auto-logout 3600
```

exit: The command lets you Exit from current mode

Syntax: **exit**

Parameter : **<cr>:** means press the Enter key.

EXAMPLE:

```
Switch(aaa)# exit
Switch#
```

help: This command lets you Show available commands

Syntax: **help**

Parameter : **<cr>:** means press the Enter key.

EXAMPLE:

```
Switch# help

Commands available:
  aaa                 Authentication, Authorization, Accounting
  access              Access management
  account             User account management
  acl                 Access control list
  aggregation          Link Aggregation
  arp-inspection       ARP inspection
  auth                Authentication method
```

history: This command lets you Show a list of previously run commands

Syntax: **history**

Parameter : **<cr>:** means press the Enter key.

EXAMPLE:

```
Switch# history

Command history:
  0. help
  1. history
  2. 0
  3. history
  4. 3
  5. history
```

logout: This command lets you Disconnect

Syntax: **logout**

Parameter : **<cr>:** means press the Enter key.

EXAMPLE:

```
Switch# logout
Username:
```

quit: This command lets you Disconnect

Syntax: **quit**

Parameter : **<cr>:** means press the Enter key.

EXAMPLE:

```
Switch# quit
Username:
```

restore: This command lets you Restore running configuration

Syntax: **restore** default keep-ip/ <cr>

restore user

Parameter : **default:** Restore configuration as factory default

user: Restore configuration as user configuration

keep-ip: Restore configuration as factory default unless ip address

<cr>

EXAMPLE:

```
Switch# restore default keep-ip

Switch# restore user
```

save: This command lets you Save running configuration

Syntax: **save** start/ user

Parameter : **start:** Save running configuration as start configuration

user: Save running configuration as user configuration

EXAMPLE:

```
Switch# save start

Switch# save user
```

Publication date: Feb., 2012
Revision A1

Black Box Tech Support: FREE! Live. 24/7.

Great tech support is just 30 seconds away at 724-746-5500 or blackbox.com.

BLACK BOX®
NETWORK SERVICES

About Black Box

Black Box provides an extensive range of networking and infrastructure products. You'll find everything from cabinets and racks and power and surge protection products to media converters and Ethernet switches all supported by free, live 24/7 Tech support available in 30 seconds or less.

© Copyright 2013. Black Box Corporation. All rights reserved. Black Box® and the Double Diamond logo are registered trademarks of BB Technologies, Inc. Any third-party trademarks appearing in this manual are acknowledged to be the property of their respective owners.

LGB5124A_LGB5128A CLI Guide, version 1